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THE ADULT CRIPPLE *

ARCHER O'REILLY, M.D.
ST. LOUIS

There is much interest at present in the problem of the crippled child, and in most states much is being done for his care and education. The crippled child of today is the adult cripple of tomorrow, and everything that is being done to restore him lessens the problem of the adult cripple. This activity is an encouraging sign of an awakened interest on the part of the nation in regard to its responsibility for its cripples.

Crippled children are always objects of sympathy and the public is easily aroused to support any measure for their relief. Adult cripples, on the other hand, may arouse sympathy as individuals, but as a class they are regarded as accidents of life, to be helped if possible, or supported at public or private expense when adequate means of treatment are lacking. The cripple as an economic responsibility is receiving considerable attention from state and federal governments and much advance has been made in vocational rehabilitation, but the public must be aroused to the problem before we can hope that it will be solved.

The crippled child, the adult crippled by disease, and the ever increasing number of industrial and public accident cases supply us with the yearly quota of adult cripples. That this quota is large is shown by numerous statistics. A bulletin of the North Dakota Rehabilitation Service says, "It is a striking fact that there are more accidents each year in industry resulting in total or partial disability than resulted from American participation in the recent war. There were 3,800 leg and arm amputations in the American forces. There occur yearly approximately 14,000 such amputations as a result of accidents," and these are mostly industrial. Edgar F. Allen, president of the International Society for Crippled Children, estimates that there are 500,000 cripples in the United States under 21 years of age. The federal Board of Vocational Education estimates that each year 50,000 are added to the army of disabled in need of vocational rehabilitation; this does not include patients unfit for rehabilitation, but does include those disabled from disease.

The adult cripple is an orthopedic problem. The orthopedic surgeon must see that the disabled person is made as nearly normal as possible, so that he may be given the best opportunity for a happy and useful life.

The patient must be under the care of men trained in the treatment of crippling diseases and accidents. At present, too many patients are seen with needless disability as a result of unskilled treatment. Fingers and joints are permanently stiffened because the attending physician did not know the importance, or the technic, of mobilization; there are weeks or months of unnecessary idleness while motion is being restored to needlessly stiff joints, or while unnecessary deformities are being corrected. Industry must be taught that, in the long run, skilled advice is cheap, both from a humanitarian point of view, and especially from an economic one. Adequate facilities for treatment are necessary for good results. W. C. Campbell expresses this in a report of the Hospital for Crippled Adults when he says:

> Providing the necessary hospital accommodations for any large number of these patients, however, is a serious problem; first, because the number of charity beds in any of the general hospitals is necessarily limited, and second, because the nature of the surgical treatment requires long periods of hospitalization, particularly in the convalescent period, when it is not necessary for the patient to occupy one of the active surgical beds in a hospital, which are so badly needed for acute surgical conditions of other types.

THE JOURNAL this year lists sixty-two orthopedic hospitals in the United States with 5,595 beds; in at least forty-one of these hospitals 3,183 beds are definitely for children, and most of the others take both children and adults. There are also beds in general and industrial hospitals, but these require a quick turnover, and unless the patients are moved the service soon becomes clogged. Other patients must wait, often suffering economic loss and possibly a most serious permanent disability. There should be convalescent hospitals for adult cripples, either public or private, in every state and large industrial community, to relieve the strain on the hospital; there should also be more strictly orthopedic hospitals for adults.

A beginning along this line was made in the Hospital for Crippled Adults at Memphis, but the example has not been followed in many other places. Dr. W. C. Campbell, in a letter, states that it is the only hospital for crippled adults that he knows of in this country.

Joint tuberculosis is treated in many of the state and other hospitals for tuberculosis, but such cases comprise only a small part of the adult cripple population, and many of these hospitals are not equipped for the care of orthopedic cases and take comparatively little interest in them. This is also true of the ordinary convalescent hospital or home.

The problem of the adult cripple is big enough and important enough to demand these facilities of treatment, so that the patient can be hospitalized long enough to insure the maximum physical rehabilitation.

That the adult cripple is an important economic problem has been recognized by the states and by the federal government. The Federal Civilian Vocational Rehabilitation Act aims to promote the vocational rehabilitation of adult cripples through cooperation with the states. This movement has progressed rapidly, and by June, 1927, forty-one states had accepted the pro-

* Chairman's address, read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

visions of the federal bill. In some of the states, however, only a small beginning has been made. The economic importance of rehabilitation is illustrated by statistics from Indiana. Here, the average weekly wage before injury of a group of persons rehabilitated in 1924 was $10.38; after rehabilitation it was $21.13. Of the group, 41 per cent were unable to earn before rehabilitation and 20 per cent had never earned. The average weekly wage of those working was $19.65 before injury; after rehabilitation it was $22.68. Those who had never worked were given an average earning capacity of $17.20. According to Bulletin 120 of the Federal Board of Vocational Education, in the United States the average weekly wage of all persons rehabilitated in 1924 was $26.07. Their life expectancy was twenty years, which gives them an earning capacity of $147,004,000, at a cost to the state and the federal government of $1,242,557. It costs about $235 to rehabilitate a disabled person, and about $300 to $500 a year to maintain one who is unable to work.

In order to secure the highest type of vocational rehabilitation it is necessary to secure the greatest amount of physical rehabilitation. A consideration of the figures quoted will show that not only humanitarian motives but also economic principles justify the establishment of adequate hospitals manned by expert staffs devoted to the treatment of the adult cripple.

It is the duty of the orthopedic surgeon, as a medical man and as a citizen, to work for higher standards of treatment and for vastly improved facilities, so that the adult cripple may be made not only economically more efficient but also a happier and better citizen.

FOLLOW-UP STUDIES ON PERSONS WHO HAVE HAD EPIDEMIC ENCEPHALITIS *

LLOYD H. ZIEGLER, M.D.
ROCHESTER, MINN.

In slightly more than a decade, during which encephalitis has been epidemic, the varieties of acute manifestations and sequelae of the disease seem to be endless. Its destructiveness has impressed every one. The chronic and progressive nature of the sequelae and their unresponsiveness to treatment are rather universally accepted. That the disease is infectious, almost every one believes. Differences of opinion regarding the specific etiology are prevalent. The associated lesions tend to demonstrate the vulnerability of certain structures of the brain. Thus far, the extensive literature on the subject has dealt with descriptions of clinical cases, various attempts at treatment, notes on epidemiology, and some reports on pathology and bacteriology. Few reports have been made on the subsequent condition of patients who have had the disease.

Sprunt [1] reported fifty cases, thirty-five of which he was able to trace. He reported the recovery of a patient who had had parkinsonian sequelae. Twelve, or about a third, of his patients were able to work. One patient died by suicide.

Turner and Critchley [2] have reported the late results in twenty-nine cases in which the respiratory syndrome was associated. Two patients seemed to be entirely well. The respiratory disorder of twelve patients was improved and of thirteen it was unchanged. Two patients had died. Some of the patients had recovered from the respiratory syndrome and other sequelae had developed.

Thiele,[3] from Bonhoeffer's clinic in Berlin, reported somewhat optimistically the results of caring for children with behavior disorders following epidemic encephalitis. Bond and Partridge [4] also reported favorable results from the custodial care and training of a group of children with such behavior disorders.

TABLE 1.—*Response to Questionnaire*

Syndrome or Stage of Disease	Patients From Whom Information Was Requested	Patients From Whom Information Was Received	Percentage of 752 Traced*
Parkinsonian	1,200	586	78.0
Residual type (exhaustion, cerebellar, choreiform, narcoleptoid, vestibular, convulsions, myelitic)	125	75	9.6
Respiratory	105	70	9.3
Acute and subacute	60	41	4.3
Conjugate ocular spasm	50	40	4.2
Behavior disorders	65	24	3.1
Myoclonic type	40	12	1.5
Bulbar type	40	8	1.0+
Encephalomyelitis and meningoencephalomyelitis	400 cases not traced because of the difficulty in distinguishing from disseminated sclerosis during observation		

* In some cases two or more syndromes were present; these were listed under each syndrome.

Kennedy,[5] in 1924, reported his observations at the Mayo Clinic in sixty-one children aged less than 14 with various sequelae of epidemic encephalitis. He did not note a tendency to improve among the parkinsonian types of the disease. A few patients with behavior disorders improved. A limited number with the respiratory syndrome recovered. He believed that respiratory disorders were more common among children than among adults.

Following an epidemic of average severity in the spring of 1924, Robb [6] at Belfast kept in touch for two and a half years with a group of 173 patients whom he had seen in the acute stage of the disease. The mortality during this period in the acute stage was 12.1 per cent, and in the chronic stage 4.9 per cent. The recovery rate at the end of this time was 8.8 per cent. Of the patients who survived the acute attack, 58.8 per cent had the parkinsonian syndrome. He was of

TABLE 2.—*Acute Epidemic Encephalitis*

Annual Incidence										
Year	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Cases	17	93	180	62	56	111	54	37	19	2

Monthly Incidence	January	February	March	April	May	June	July	August	September	October	November	December
Cases	120	121	51	18	10	11	5	7	6	5	18	70

* From the Section on Clinical Neurology, the Mayo Clinic.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Sprunt, T. P.: Epidemic Encephalitis; an Analysis of Fifty Cases, Am. J. M. Sc. **174:** 660-665 (Nov.) 1927.

2. Turner, W. A., and Critchley, MacDonald: The Prognosis and Late Results of Postencephalitic Respiratory Disorders, J. Neurol. & Psychopath. **31:** 191-208 (Jan.) 1928.

3. Thiele, R.: Zur Kenntnis der psychischen Residuärzustande nach Encephalitis epidemica bei Kindern und Jugendlichen, insbesondere der weiteren Entwicklung dieser Fälle, Abhandl. a. d. Neurol. **36:** 1-100, 1926.

4. Bond, E. D., and Partridge, G. E.: Postencephalitis Behavior Disorders in Boys and Their Management in a Hospital, Am. J. Psychiat. **6:** 25-103 (July) 1926.

5. Kennedy, R. L. J.: The Prognosis of Sequelae of Epidemic Encephalitis in Children, Am. J. Dis. Child. **28:** 158-172 (Aug.) 1924.

6. Robb, A. G.: Epidemic Encephalitis: the Proportion of Permanent Recoveries, Brit. M. J. **1:** 615-616 (April) 1927.

the opinion that a later survey would show fewer recoveries.

Strecker [7] has recently reported in some detail the types of behavior disorders in children, and the tendency to recovery.

The present study was undertaken in order to learn more of the late outcome of the disease, to note the

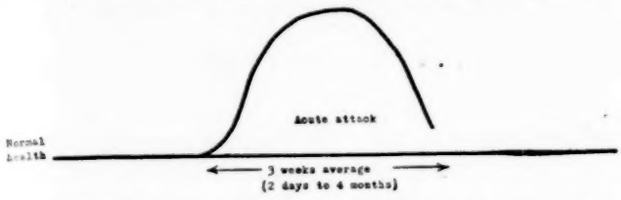

Chart 1.—The acute attack of epidemic encephalitis; 84.8 per cent of all patients had mild or severe acute manifestations as follows: disturbance of sleep, 83.5 per cent; diplopia (not all in acute stage), 46.7 per cent; delirium, 32.1 per cent; severe pain, 10+ per cent; fever and twitching of muscles, frequent. Of all acute and subacute cases followed (forty-one cases), death has occurred in 31.7 per cent; 17 per cent of the same group recovered. The acute attack has been diagnosed or associated with "colds," influenza, smallpox, measles, mumps, acute rheumatic fever, pleurisy, "sore eyes," diarrhea, injury to the head or back, brain tumor, acute appendicitis, typhoid, meningitis, skin rash, pelvic abscess, neuritis, tonsillitis, and so forth.

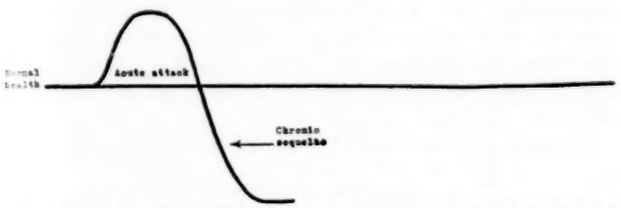

Chart 2.—Chronic sequelae immediately after acute attack in 50.1 per cent of all cases.

types in which recovery occurred, to study the economic and other adaptabilities of the patients, to discover any factors that might affect prognosis, and to summarize our experience with regard to treatment.

In all cases at the Mayo Clinic in which a diagnosis of epidemic encephalitis or any of its residuals or sequelae had been made, patients were requested to answer questionnaires or to have their relatives or friends do so, giving as much information as possible regarding their present condition and ability to work. In some cases, the patient's physician was so kind as to send reports regarding the patient. A few patients returned for examination. Thus, information was received concerning 752 patients (table 1). Ninety-nine were dead. In many instances the exact cause of death was not stated; but, of the known causes, pneumonia (which included several cases of the aspiration type), suicide, and cerebral vascular accidents were given.

In a search for factors that might determine prognosis, many aspects of the lives of the patients were scrutinized. There seemed nothing significant concerning occupation, habitat, climate, disease tendencies in families, or the physical fitness of the patients, except that nearly all had obvious foci of infection. Rarely did two persons in the same household have the disease, although several in a community might have it at the same time. Males and females were affected with the same destructiveness. The disease was more common in males than in females, the ratio being 1:2.5. The ratio of females and males in 200 cases of paralysis agitans (noted previous to 1917) was 1:2.8. The average age at onset in the encephalitis group and in the paralysis agitans group was, respectively, 30 and 54 years. The disease affected old and young with about equal severity. In approximately 35 per cent of the entire group a history of influenza was not given. In 22 per cent the acute attack was called influenza, but careful clinical analysis nearly always revealed the encephalitic features of the so-called influenza.

The epidemics of encephalitis in 1920 and 1923 (table 2) seemed most severe. The disease was most common in the winter months, when pneumonia and other infectious diseases were prevalent (table 2). After an average of five and a half years or more since the onset, the clinical course of the disease was classified fairly readily into several definite stages (charts 1 to 6).

Are the residual stages or the stages of complete recovery (charts 3 and 4) in such cases periods in which infection is working insidiously to bring about sequelae, or has the infection subsided and does the sequela later represent degeneration, either as a result of primary injury to the brain cells, or a result of injury to blood vessels in the acute stage, when perivascular lymphocytic infiltration is so prominent in the picture? Most evidence at present points to the hypothesis of chronic infection, and the sequelae are often called chronic encephalitis.

Table 3, although presenting a story of profound morbidity, presents its hopeful aspects. More patients than we are aware of may have recovered from the acute attack. In certain cases in which the patients are apparently well, chronic sequelae may develop. In one case, chronic sequelae developed seven years after the acute attack. Patients manifesting respiratory and behavior syndromes and some of the other residual symptoms apparently improve and may even recover. The further course of such patients, however, should be followed carefully. Although recovery is rare, in

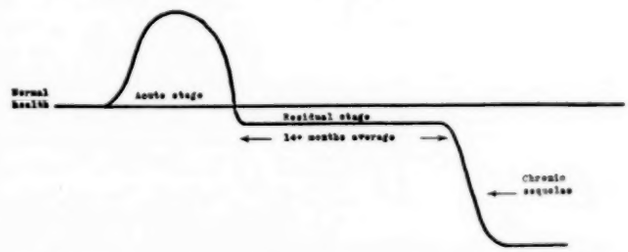

Chart 3.—Residual stage after acute attack; 25.3 per cent of all patients had residual fatigue, weakness, and so forth, fourteen or more months (average) before chronic sequelae developed. The residual stage is often called chronic nervous exhaustion, or postinfluenza debility. A follow-up study of patients in whom a diagnosis of postinfluenza debility was made reveals that about 15 per cent of them now have parkinsonian syndromes.

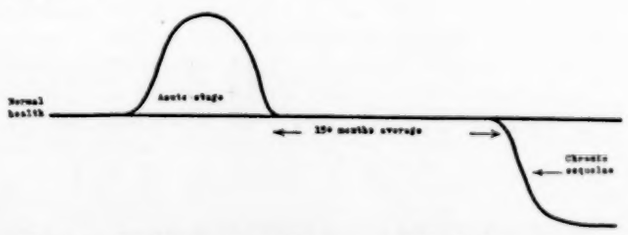

Chart 4.—Complete recovery after acute attack; 9.4 per cent of all patients recovered entirely from the acute stage, but fifteen or more months (average) later developed chronic sequelae.

a few cases, including parkinsonian types, the disease is arrested and remains stationary for long periods, and patients are able to make adequate occupational adjustments.

In the course of so large a survey, a few miscellaneous clinical facts were observed which seem worth recording. Few of these patients became psychotic,

7. Strecker: Encephalitis and Its Effect on the Behavior of Children, read before the meeting of the American Neurological Association, May 1, 1928.

unless one so considers those who committed suicide. Only a few with the parkinsonian syndrome were subsequently placed in institutions because of "catatonic dementia praecox." One such patient who had been hospitalized had attacks in which he did not lose consciousness but remained in a fixed position, unable to move for about half a minute each half-hour. These attacks suggest the term anergolepsy as probably more appropriate than catalepsy.

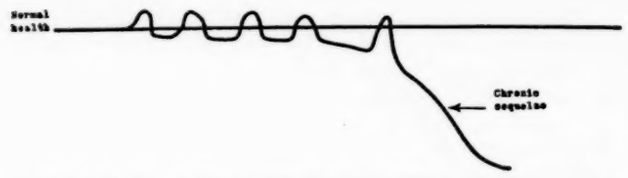

Chart 5.—Repeated acute attacks: A few patients had repeated acute attacks without complete recovery between, and gradually developed chronic sequelae.

Chart 6.—Insidious onset of chronic sequelae; 15.2 per cent of all patients did not have any history of an acute attack, but had an insidious onset of chronic sequelae; many of these did not give any history of influenza.

Four women were pregnant during the acute stage of the disease; only one miscarried. Subsequent to the acute attack, six women have gone through one pregnancy successfully, three have gone through two with success, and two have had three children. So far as can be determined, the children have not suffered ill effects.

Two patients who had been subject to severe migraine were free from it following severe acute attacks of encephalitis after which profound parkinsonian syndromes developed.

TABLE 3.—*Clinical Course of Seven Hundred and Fifty-Two Patients*

Syndrome or Stage of Disease	Patients	Subsequent Clinical Course, per Cent: Dead	Worse	Same	Better	Well	Ability to Work, per Cent: Unable to Work	Does Some Work	Works Regularly
Parkinsonian	586	12.5	50.7	19.1	17.7	....	66.7	23.1	10.2
Residual type (cerebellar, choreiform, narcoleptoid exhaustion, some meningoencephalitis and encephalomyelitis)	75*	9.3	22.7	21.3	44.0	2.7	35.3	29.4	35.3
Respiratory	70†	5.7	18.6	31.4	42.9	1.4	39.3	44.0	16.7
Acute and subacute	41	31.7	9.8	14.6	26.9	17.0	28.6	21.4	50.0
Conjugate deviation of eyes	40‡	...	55.0	30.0	15.0	....	60.0	37.5	2.5
Behavior disorders	24§	8.3	20.8	20.8	50.0	....	31.8	50.0	18.2
Myoclonic type	12	....	25.0	33.3	41.7	....	50.0	25.0	25.0
Bulbar type	8	37.5	37.5	25.0	....	....	80.0	20.0	....
Total cases, all types	752#	13.2	42.9	20.1	22.5	1.3	58.6	25.7	15.7

* Encephalomyelitis was not usually included because of the difficulty in distinguishing from disseminated sclerosis.
† Parkinsonian syndrome also present in 29.3 per cent.
‡ A few showed conjugate deviation to either side.
§ Does not include those reported by Kennedy.
# In many cases two or more syndromes were present; they were classified under each syndrome shown.

Few patients retained the diplopia, although many had this symptom in the acute stage, or at some time in the chronic stage. Choking of the optic disk was observed in the acute stage in one patient. Few suffered later from the sleep disturbances so common in the acute stages of the disease. A consideration of the severity of this disease of the brain impresses one with the fact that headache is a comparatively infrequent symptom; when it occurs, it has a predilection for the front half of the head, especially in and above the region of the eyes.

Many methods of treatment have been used, and it is claimed that all methods have achieved good results in the occasional case. Scopolamine seems to have helped more than any other drug, especially in the parkinsonian type of case. This drug was the factor which permitted a few patients to work. Sodium cacodylate, given as a tonic, has been praised in some cases, although in others the patients apparently become worse during its administration. Iodides seem to have been helpful in some cases. Certain patients have dated their improvement from the removal of foci of infection. Rest, sunshine, massage, exercise and good general care, including all kinds of nourishing food, have been praised in turn by one or another patient.

On the hypothesis that the disease is infectious, a group of patients suffering from obvious foci of infection and in the early stages of chronic sequelae were treated with a vaccine three months or more, which was usually prepared from streptococci obtained from themselves or from patients with similar disorders.

TABLE 4.—*Comparison of the Clinical Course Following Vaccine and Other Types of Treatment of Chronic Cases*

Type of Treatment	Patients	Subsequent Clinical Course, per Cent: Dead	Worse	Same	Better	Well	Ability to Work, per Cent: Unable to Work	Does Some Work	Works Regularly
Vaccine treatment	69	4.3	46.4	27.6	21.7	....	62.1	21.2	16.7
Treatment other than vaccine	125	24.0	31.2	22.4	22.4	....	59.0	23.3	14.7

The vaccines were usually given subcutaneously in increasing doses, once a week, beginning with 200,000,000 dead bacteria and increasing gradually to 2,000,000,000, depending on the patient's reaction.[8]

Patients not treated with vaccine, but treated in other ways (scopolamine, removal of foci, sodium cacodylate, iodides, good general care) were available as controls. Not all patients treated with vaccine are discussed here, but only those responding to the follow-up study. The results of the vaccine treatment with control studies are summarized in table 4.

The death rate in cases in which vaccine treatment was given was decidedly lower than in the control cases. In other respects the treatment by vaccine seems to be associated with about the same clinical results as those obtained in the control group, particularly if one judges by the patient's capacity to work. This series is too small and possibly the time interval too short to permit one to draw far-reaching conclusions regarding treatment. Possibly any foreign protein might have produced the same results. If one wishes to accept the suggestion presented that lowered mortality is a criterion of therapeutic efficiency, it might be justifiable to give treatment by vaccine further trial. We must continue to search for better remedies to prevent, retard or arrest the chronic sequelae of this disease.

8 Rosenow, E. C.: Personal communication to the author.

SUMMARY

Seven hundred and fifty-two patients, who had had epidemic encephalitis for an average of five and a half years, were traced. The occupation, age and sex did not apparently bear any relationship to the severity of the disease. Other factors were not discovered that would afford prognostic information. The disease tends to have its onset chiefly during the winter months. For the most part it is a progressive disease.

The mortality rate for this group was 13.2 per cent and the recovery rate 1.3 per cent about five and one-half years (average) after the onset of the disease. Of the entire group of patients 15.7 per cent are able to work regularly; 25.7 per cent are doing light or part-time work.

Patients recover from severe acute attacks, from the respiratory symptoms, and from behavior and other residual sequelae, but rarely, if ever, from the parkinsonian syndrome. Parkinsonian types may become arrested.

Of drugs, scopolamine, by the testimony of many patients, is helpful. Probably next in importance is sodium cacodylate given as a tonic. These should be supplemented by good general care and the removal of obviously active foci of infection. The vaccine used in the treatment was, as a rule, made from cultures from foci of infection; it was associated with lowered mortality, but otherwise the results from its use were similar to those from other therapeutic measures.

COMMON ERRORS IN CHOLECYSTOGRAPHY

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Cholecystography was at first widely hailed as an extremely accurate diagnostic procedure, but now its value is being questioned, some even going so far as to say that it will tell nothing that cannot be learned without it. At first the test seemed so simple that any one could apply it with good results, but this has proved not to be true. No set of rules can be followed. A knowledge of the technical procedures of the test, of the physiologic principles on which it is based, and of the pathologic conditions with which it is concerned is essential to cholecystography. Furthermore, extreme care must be exercised in the application of this knowledge to each individual case.

The fundamental conditions for cholecystography are simple. The radiopaque substance must be excreted by the liver; it must find its way to the gallbladder, and there be concentrated sufficiently to produce a shadow under the x-ray.

Insufficient excretion by the liver is probably extremely rare, since it has been shown that in the dog a cholecystogram can be obtained after destruction of about half the liver.[1]

Filling of the gallbladder results from a back flow due to the action of a valve or sphincter at the end of the common bile duct. The back pressure, however, required to fill the normal resting gallbladder is very slight, and inadequacy of this valve is probably rare. It is obvious that obstruction of the cystic duct from material within or from pressure without will prevent filling of the vesicle. Obstruction of the common bile duct prevents filling of the gallbladder with dye because it is already distended with concentrated bile. Also, the secretory activity of the liver is probably diminished by pressure.

Adequate concentration of the radiopaque material in the gallbladder depends on the activity of the mucosa, for without the mucosa a shadow cannot be produced.[2] The determination of the degree of injury to the mucosa, however, from variations in the density of the cholecystogram is a doubtful undertaking.

INDICATIONS OF ABNORMALITY IN GALLBLADDER

The absence of a shadow after intravenous administration of the drug is regarded as one of the most certain indications of abnormality, denoting blockage of the ducts, a vesicle full of stones or débris, or an injured mucosa. But herein lie many possibilities of error.

In the first place one must be sure that there is no shadow, or that none can be produced. Sometimes a very faint shadow on the film escapes the eye, or poor management of the patient or faulty technic in radiography may fail to bring out the shadow.

Since the gallbladder may reside anywhere in the right side of the abdomen it may be missed in the exposure; it may be so far off center that details will be obscure, or it may be overshadowed by the spine. The gallbladder should be located as nearly as possible by percussion and palpation of the liver, and the tube centered over it. It must be remembered that a deep inspiration lowers the gallbladder from 2 to 3 inches. Motion of the patient during exposure, straining to hold a deep breath, or intestinal peristalsis may erase delicate shadows. In the exposure and development the object should be to obtain a film of sufficient density to bring out all contrasts distinctly. A trial film should be made and the technic adjusted accordingly. If on the second film no shadow is obtained another should be taken a few hours later, when perhaps the dye will be sufficiently concentrated. If there is a good deal of intestinal gas, an enema should be given. Careful roentgenologic technic is of extreme importance. Few ordinary technicians are equal to it. It cannot be made a matter of routine, as every case requires careful adaptation and adjustment.

Poor management of the patient with regard to feeding may result in failure to obtain a shadow and bring about an erroneous diagnosis. The following case will illustrate this point: A patient was given a meal at 5:30 p. m. and the drug administered intravenously at 8:30 p. m. Half an hour later she had a reaction with vomiting, as she said, of "everything she had eaten for supper." If by chance this patient had not vomited, the gallbladder would certainly have been emptying while it should have been filling with the dye. If a shadow had not resulted, a false diagnosis of pathologic gallbladder would have been made.

A faint shadow is another important criterion of abnormality in the gallbladder. But this can also be due to insufficient penetration or exposure of the subject, ineffective development of the film, or emptying of the gallbladder when it should have been filling with dye, as a result of ill advised feeding. As with absence of the shadow, a faint shadow may be brought about by the fact that the gallbladder already contains stones or débris and will not admit a sufficient amount of the dye, though the concentrating power of the mucosa may

1. Fried, B. M., and Whitaker, L. R.: The Effect of Liver Damage on Cholecystography in Dogs by the Use of Sodium Tetraiodophenolphthalein, Arch. Int. Med. **37**: 388-397 (March) 1926.

2. Spurling, R. G., and Whitaker, L. R.: End-Results of Cholecystostomy as Shown by the Cholecystogram, Surg. Gynec. Obst. **44**: 463-467 (April) 1927.

be unimpaired. As a matter of fact, the gallbladder can be diseased to the point of cholesterosis and stone formation and still preserve normal concentrating and contractile power.

The oral method is, of course, subject to all these uncertainties and also that of possible insufficient absorption of the dye from the intestine.

Mottling or inequalities of density of the shadow, if definite and constant in succeeding films, and if differentiated from gas in the duodenum or colon, almost invariably means stones. Certainty in this matter, however, requires care and effort.

In the first place, sufficient penetration must be obtained to bring out these "negative" areas in the shadow of the gallbladder. Not only must penetration of the subject be secured but penetration of the gallbladder itself in order to emphasize differences in density due to stones. Otherwise the shadow of the gallbladder may appear to be clear and the viscus thought to be normal, even though it contains stones.

In this connection also it is well to remember that a dose of the drug above the optimum may produce a shadow so dense that small stones of less density will not produce negative shadows. A dose of 35 mg. of sodium tetraiodophenolphthalein per kilogram of body weight is generally enough. No absolute rules should be followed. In general, it is better not to give fixed amounts, but a dose relative to the weight and thickness of the patient.

Sometimes the question of mottling of a shadow is settled by giving a fat meal. The resulting contraction of the gallbladder often lifts it up underneath the liver, away from the gas-filled colon and duodenum, where mottling is significant. Furthermore, the volume of opaque material may be reduced enough to allow shadows of stones of low density, not at first noted, to be brought out by contrast.

Gas in the colon and duodenum can be evacuated more or less by enemas and solution of pituitary. If all these measures fail to remove troublesome gas, mottling of the shadow should not be considered of great significance. The best that can be done under these conditions is to look for mottling in the upper lateral aspect of the shadow of the gallbladder, a portion not generally overlapped by the shadow of the duodenum or colon, at least when the exposure is made with the subject prone.

METHODS OF EMPTYING GALLBLADDER

Since the discovery that a meal rich in fat would rapidly empty the human gallbladder,[3] it has been widely used as an adjunct to cholecystography.

Giving a fat meal a few hours before the administration of the drug has been advocated on the ground that this empties the gallbladder and allows more effective filling with the dye. But one must be wary lest, in the zeal to improve conditions, they are made less favorable. Fat is supposed to retard emptying of the stomach. Who knows how long digestion may go on after a fat meal in normal persons, to say nothing of abnormal ones? Then, too, some gallbladders empty in half an hour after the meal, while others may require from five to eight hours. Physiologic mechanisms do not always work according to preconceived notions, and uncertainties must be avoided as far as possible in any diagnostic procedure. Consequently, it is better not to give a fat meal before cholecystography, else the gallbladder may be emptying when it should be filling with dye.

Pribaum[4] has advocated the administration of solution of pituitary to empty the gallbladder before the dye is given. But the action of solution of pituitary on the gallbladder is uncertain,[5] and why subject the patient to discomfort from this drug, especially since it is not necessary that the gallbladder be emptied beforehand? Theoretically, the vesicle should not be full of extremely concentrated bile before the test, but normally the bile in the gallbladder is not markedly concentrated even from ten to twelve hours after a meal, and I have seldom failed to obtain cholecystograms in dogs after twenty-four hours of fasting. The first consideration is to be sure that the gallbladder is not emptying when the drug is given; the second is that preferably it shall not contain overconcentrated bile.

In the oral administration of the drug, many advocate giving it with an ordinary meal, on the ground that by the time the drug is absorbed the gallbladder will be empty and ready to fill with the dye. But there is no assurance of this. The gallbladder may remain contracted for hours, until much of the dye is in the colon. The fact that many obtain good results by this method means nothing. It is sure results that should be striven for, results obtained by knowing as far as possible what one is doing all the time. With the oral method, two conditions are essential for the best results: (*a*) Digestion must be absent; (*b*) the drug must be protected from the action of the stomach and vice versa.

The most important applications of the fat meal to cholecystography are to demonstrate contractility of the wall of the gallbladder, and to obtain evidence as to the presence of stones or débris by noting whether or not the vesicle will completely empty.

I should like to dispel the prevailing belief that if a gallbladder shadow is reduced moderately in size in from one-half to one hour after a fat meal the vesicle is normal. Nothing in cholecystography tells that the vesicle is normal. All that can be determined is whether or not the gallbladder can do this or that. Moderate contraction after a fat meal simply indicates that the musculature of the gallbladder is active enough to produce this effect. There may be, notwithstanding, some round cell infiltration of the wall of the vesicle; its mucosa may be the seat of cholesterosis, and it may contain stones of varying number and size.

But this is definite: if the gallbladder is reduced to one-tenth or one-twentieth its original volume in from one to six hours after a fat meal, one may be certain that its wall is not severely diseased and that it contains very little foreign material, probably none. Therefore, the greatest effort should be made to induce full contraction in the gallbladder through the agency of the fat meal, and no trouble should be spared to observe the process to the end, because this result, if obtained, is definite and may save the patient a surgical operation.

Contraction of the gallbladder depends on the digestion and absorption of food, especially fat. If for some reason this does not occur in the patient, the gallbladder, though normal, will not contract. Nausea, distaste for food, nervousness or other factors may prevent emptying of the vesicle. If the condition of the patient is

3. Milliken, G., and Whitaker, L. R.: The Clinical Use of Sodium Tetraiodophenolphthalein for Cholecystography, Surg. Gynec. Obst. **40**:646-653 (May) 1925. Whitaker, L. R.; Milliken, G., and Vogt, E. C.: The Oral Administration of Sodium Tetraiodophenolphthalein for Cholecystography, ibid. **40**: 847-851 (June) 1925. Sosman, M. C.; Whitaker, L. R., and Edson, P. J.: Clinical and Experimental Cholecystography, Am. J. Roentgenol. **14**: 495-503 (Dec.) 1925.

4. Pribaum, B. O.; Grunenberg, K., and Strauss, D., quoted by Graham, Cole, Copher and Moore (footnote 6).

5. Whitaker, L. R., and Bassin, A. S.: Unpublished data.

not favorable when the appointed time comes to give the fat meal, it should be postponed. The meal should be palatable and relished if possible. From four to six egg yolks with from 2 to 4 ounces of cream and enough ginger ale to make it palatable is a suitable meal for this purpose. It need not be taken all at once. Half may be taken and the rest from twenty to thirty minutes later if preferred.

A dense shadow that is not reduced after a fat meal would be suggestive of a temporary disturbance in digestion, because the presence of a dense shadow must mean that the gallbladder had previously emptied in order to be filled with the dye. It is quite probable that the effect of the drug, combined with fasting and excitement, may result in failure of the gallbladder to empty after the fat meal, though it might do so under better conditions. For these reasons long persistence of the shadow whether a fat meal is given or not is of little value as a sign of a diseased gallbladder.

In their new book, Graham and his associates [6] minimize the diagnostic value of the fat meal in cholecystography, preferring to estimate the elasticity of the viscus "under as nearly normal conditions as the starvation period and the resumption of ordinary diet permits." But under that method there are so many variable factors that little information of value can be obtained. Why not make the procedure as definite as possible? Surely there is no more certain indication of a normal musculature and absence of débris in the gallbladder than the observation of its contraction to a small fraction of its original size.

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EFFECT OF LIQUID PETROLATUM GIVEN BY MOUTH ON DIGESTION AND ABSORPTION OF FOOD *

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Whether or not refined liquid petrolatum, which is so widely used for laxative purposes, interferes with the digestion and absorption of food, is a question that has often been raised. It is generally accepted that liquid petrolatum acts as an intestinal lubricant and that it exerts a gentle laxative influence on the bowels, but, besides this, little or nothing is definitely known of other effects, if any, that it may have on gastric and intestinal secretion and digestive activity. Some have thought that although the oil is desirable and beneficial as a laxative, it may exert inimical effects by depriving the body of fat soluble vitamin A, or that its free use may in some way favor the development of gastric or intestinal cancer. Some patients, too, have complained that the oil interferes with digestion in different ways; but these complaints are most likely due to the unpleasant sensation that many persons have on taking oil, some finding it more or less nauseating.

The purpose of this research, both in human beings and in dogs, was to ascertain whether the oil, when given by mouth, does interfere with the digestive and absorptive processes, as shown by the fecal content of total nitrogen and total reducing substances.

6. Graham, E. A.; Cole, W. H.; Copher, G. H., and Moore, S.: Diseases of the Gallbladder and Bile Ducts, Philadelphia, Lea & Febiger, 1928.

* From the Pavlov and Clinical Laboratories of the Battle Creek Sanitarium.

* Read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

HISTORICAL REVIEW

Records of any experimental work on this particular problem, namely, the effect of liquid petrolatum given by mouth on the digestion and absorption of food, have not been found.

Pavlov and his pupils appear to have been pioneers in the study of the effects of oils on digestion. In the late nineties they showed that animal and vegetable oils inhibit gastric secretion, but they did not experiment with mineral oil.

According to Dr. Möller,[1] the medicinal use of earth oil (petroleum) is hoary with age. Herodotus noted earth oil wells in the vicinity of Susa, and Arrian described the finding of such wells on the Oxus. History records that oil was used in a medicinal way by the Assyrians and the Egyptians. In almost all places where earth oil has been found in nature, whether in Baku or among the Seneca Indians of Pennsylvania, it has been recognized as a popular remedy. In the fifteenth century the monks sold mineral oil as a magic medicine. It has been used for lameness, gout, various skin diseases, including itch, ulcers, abscesses, worms, constipation and hemorrhoids, and even for cancer.

In 1923, Boldyreff and Kellogg [2] reported that liquid petrolatum introduced into the rectum does not diminish appetite and does not have any harmful effect on gastric digestion.

About two years later, Lanczos [3] published a report of her experimental work on cats, in which she watched the passage of food along the alimentary canal through the fluoroscope. Observations were made immediately after feeding and then hourly. Among her conclusions are the following, briefly stated:

1. The passage of the bismuth meal through the stomach and small intestine was hastened.
2. The peristalsis of the stomach and small bowel was visibly increased.
3. Apparently there was little or no effect on the large intestine.
4. The oil appears to relieve certain forms of spasm of the stomach and bowel.

Leitch [4] has made several important contributions regarding "paraffin cancer" and in writing about some experiments reported that thirty out of seventy-five mice developed papillomas, epitheliomas and even sarcomas through the application of "unfinished" lubricating oil to the skin, thus indicating its carcinogenic properties. He holds that "oil [mineral] has a highly irritant action on the tissues of the skin."

Kondoleon and Joannides,[5] experimenting with dogs, found that paraffin protected the body by hindering the absorption of toxic substances from the intestine, but that it did not have a bactericidal effect.

Schlagintweit [6] holds that there is little likelihood *a priori* of liquid petrolatum being a lubricant as there is no adherence of the oil to the walls of the alimentary canal except in extreme pathologic conditions. In experimenting on mice he found that the ordinary motility time was from five to six hours, but that regardless of the size of the dose oil reduced this time

1. Möller: Das Erdöl Als Heilmittel, Deutsche med. Wchnschr. **48**: 161 (Feb.) 1922.
2. Boldyreff, W. N., and Kellogg, J. H.: The Influence of Different Kinds of Oil Introduced into the Rectum, on Gastric Secretion, Bull. Battle Creek Sanitarium and Hospital Clinic, May, 1925.
3. Lanczos, Anna: The Action of Liquid Petrolatum on the Intestines, Arch. f. exper. Path. u. Pharmakol. **112**: 365 (May) 1926.
4. Leitch, Archibald: Mule-Spinners' Cancer and Mineral Oils, Brit. M. J. **2**: 941 (Nov. 22) 1924.
5. Kondoleon, Emmanuel; and Joannides, G.: Experimentelle Prüfung des Wirkung des flüssigen Paraffins im Darme, München. med. Wchnschr. **73**: 1356 (Aug. 13) 1926.
6. Schlagintweit, E.: Untersuchungen über die Darmwirkung des Paraffinum liquidum, München. med. Wchnschr. **74**: 671 (April 22) 1927.

to from four to five hours. The duration of oil elimination was almost proportional to the size of the dose. A dose of 0.001 cc. per gram of mouse took seven hours for elimination, while a dose varying from 0.1 to 0.3 cc. required about forty-eight hours. He found that in therapeutic doses all the oil forms a homogeneous emulsion, both in the stomach and in the bowels. The fecal balls of the oil-fed mice were softer and moister as a consequence not only of the presence of the emulsified oil but also of the addition of about 15 per cent more water than normal.

Burrows and Farr [7] experimented with rats, and in a preliminary report state the following conclusions:

> The mineral oils, quite different from the vegetable oils, not only remove the fat soluble vitamins from the food but produce other toxic effects as well. From our studies of the effects of these oils on the tissues and in the production of cancer, it may be assumed that their toxic effect is due to the fact that they act on the mucous membrane of the intestines to further strip these tissues of the body of their fat soluble vitamin reserve.

Dutcher, Ely and Honeywell [8] give a preliminary report of a series of studies on rats to determine the effect of liquid petrolatum on the assimilation of vitamins A and D. They report as follows:

> It is quite evident from the results obtained that mineral oils possess the property of dissolving vitamin A from food materials, thereby depriving the body of this vitamin, even though vitamin A be present in excess of the body needs. . . .
>
> It is clear that mineral oil may act as a solvent for vitamin A, thereby depleting the ingested foods of their supply of this vitamin, but we have obtained no evidence to show that the calcifying potency of cod liver oil is appreciably affected by the presence of mineral oil. It is entirely possible that increased amounts of mineral oil might show a solvent effect on the antirachitic factor.

John Mellanby [9] experimented with cats "to determine whether fat absorption depends upon the physical and chemical properties of fat, or whether emulsification and presence of bile salts are the essential factors." With the use of liquid petrolatum he reports as follows:

> Examination of the intestine and mesentery during a period of six hours showed that there was no absorption of petroleum into the lymphatic system of the intestine although the oil passed rapidly down the intestine. . . .
>
> It is interesting to observe that liquid petroleum inhibits the absorption of bile from the intestine and therefore prevents the secretion of pancreatic juice and an increase in the secretion of bile. In this way liquid petroleum stops digestion and absorption in the small intestine, and thereby diminishes the nutritive value of any food with which it may be admixed.

RESEARCH IN DOGS

My first experiment was with dogs in the summer and autumn of 1926. Three healthy short-haired animals of almost the same size and weight were selected for the research, and were kept under excellent sanitary conditions, with separate cages indoors and large separate runs outdoors. A male (1) and a female (2) were utilized for the experiment, and the third dog (3) was used as a control.

A preliminary study was made on the intestinal motility of these and a number of other dogs by the use of carmine; all the dogs were fed once daily and given all the water they wanted. One group of ten dogs showed a motility varying from seventeen and one-half to twenty hours, while another group of five showed very little variation, seventeen and one-half to nineteen hours. The average for all the dogs was about eighteen hours, or practically the same as for healthy human beings.

Examination of the stools revealed large quantities of hair mixed with feces and forming from 20 to 40 per cent of their bulk. The hair gives considerable bulk to the stool and, acting as roughage, may have some effect in stimulating intestinal peristalsis. It was thought at first that all this hair, which the dogs undoubtedly got from licking themselves, would interfere with the analyses. To remedy this special muzzles with fine wire screens were fitted to each dog, and were worn constantly except when the dogs were feeding or drinking. But these muzzles seemed to worry the dogs, and besides at the end of twenty days all three dogs developed constipation as shown by the carmine test, the stools being delayed forty-two, forty-nine and one-half and forty-three hours, respectively, for dogs 1, 2 and 3 in spite of the fact that the feces still contained a good deal of hair. The hair problem was solved in a satisfactory way by desiccation, followed by screening out the hair.

The food was identical in quality and quantity for each of the three dogs for the entire time of the research and was given at the same time, 2 p. m., daily. Its composition was as follows:

Boiled lean beef, 100 Gm., 483 calories; whole wheat bread and brose mash, 650 Gm., or, at 116 calories per hundred grams, 754 calories; total calorific value, 1,237 calories.

Dog 1 drank about 200 cc. of water daily, dog 2, 175 cc., and dog 3, 210 cc.

Dogs 1 and 2 received liquid petrolatum on three separate periods and no oil during the intervals as follows:

July 6 to Sept. 6, 1926, preliminary period without oil.

September 7 to October 6, 20 cc. of liquid petrolatum half an hour before each meal.

October 7 to 18, period without oil.

October 19 to November 18, 20 cc. of liquid petrolatum mixed with the food daily.

November 19 to December 5, period without oil.

December 6 to 26, 29 Gm. of semisolid petrolatum (mixture of liquid and hard petrolatum) with each meal.

Dec. 27, 1926, to Jan. 11, 1927, final period without oil closing research.

The feces were collected weekly or oftener in the morning promptly after defecation and taken directly to the chemical laboratory for examination; further, the floors were carefully cleaned the day prior to the collection of the stools.

Analyses of the stools of the three dogs made prior to the giving of any oil showed as the average percentage of total nitrogen in the feces of dog 1, 5.25, dog 2, 5.35, and dog 3 (control), 5.23, or an average of 5.28 for the three dogs.

A summary of the results of this research in dogs does not show any material difference in the fecal content of nitrogen whether the dogs were given oil or not. The average total nitrogen percentage of all three dogs was 5.28 at the beginning of the research. One dog had an average percentage of 5.5 without oil and 5.3 per cent total nitrogen while taking oil, which percentage is almost identical with the average of the three dogs prior to giving oil. The control dog (3), which did not receive oil at any time, showed for all the tests an average total nitrogen fecal loss of 5 per cent.

7. Burrows, M. T., and Farr, Wanda K.: The Action of Mineral Oil per Os on the Organism, Proc. Soc. Exper. Biol. & Med. **24**, April, 1927.
8. Dutcher, R. A.; Ely, J. O., and Honeywell, H. E.: Assimilation of Vitamins A and D in Presence of Mineral Oil, Proc. Soc. Exper. Biol. & Med. **24**, June, 1927.
9. Mellanby, John: Petroleum Emulsion in the Small Intestine, J. Physiol. **64**: xxxiii (Dec. 29) 1927.

It may therefore be concluded as regards the dogs that the use of liquid petrolatum in doses of 20 cc. did not interfere in any way with the digestion or absorption of protein food, and that there was not the slightest evidence of any ill effect.

A careful record of weights was kept which shows the usual fluctuations that one might naturally expect. The weights at the beginning and at the end of the research were as follows:

Dog 1, male, Aug. 25, 1926, weight 20,000 Gm.; Jan. 2, 1927, weight, 19,900 Gm.

Dog 2, female, Aug. 25, 1926, weight, 20,600 Gm.; Jan. 2, 1927, weight, 21,920 Gm.

Dog 3, male (control), Aug. 25, 1926, weight, 20,500 Gm.; Jan. 2, 1927, weight, 20,900 Gm.

RESEARCH IN HUMAN BEINGS

The study of the effect of liquid petrolatum in human beings was carried out in the spring of 1927, and for the purpose five young women and one young man, all single and in ordinary health, were selected, and designated A, B, C, D, E and F, respectively. The women were college students working part time, and the man was a graduate nurse working as a physician's assistant. Analyses of the urine and feces were made at the outset and at four day intervals during the study. Blood counts of both red and white cells, hemoglobin tests, and differential blood counts were also made both before and after the research, but these did not show any material change.

Much thought was given to the selection of a well balanced basic diet rich in vitamins, consisting of plain foods that would not readily pall the appetite. Fixing the number of calories for each meal was a matter of careful adjustment with the students, and, once agreed on, was not changed during the time of the experiment. Thenceforth, all the students took the same articles of diet, as to both quantity and quality, at all meals, until the close of the research.

The diet of the man differed from that of the women practically only in caloric value, as he required about 25 per cent more, namely, 2,594 calories to their 2,077 calories a day.

For the preparation of the food I am indebted to Miss Anna May Glenn, dietitian, who took great pains in having the food accurately weighed, properly cooked and served in an appetizing way. She also prepared table 1.

Three meals were served, at 7 a. m., 12 m. and 5 p. m., and nothing more than water was taken between meals. The allotted portions of food were consumed faithfully at each meal, so that there was no waste.

All took daily from 900 to 1,050 cc. of water, most of it between meals.

During the periods when oil was given, 15 cc. of plain liquid petrolatum, considered to be an average therapeutic dose, was taken with each meal.

RESULTS OF EXPERIMENT

Analysis of Feces.—I will consider first the total fecal nitrogen waste, and summarize the results as follows:

Average nitrogen percentages before the experiment: A, 5.6; B, 5.9; C, 5.7; D, 5.7; E, 5.5; F, 6.4; grand average, 5.8.

Average nitrogen percentages of the three periods without oil: A, 5.7; B, 5.6; C, 5.9; D, 5.6; E, 5.7; F, 6.1; grand average, 5.7.

Average nitrogen percentages of the two periods with oil: A, 5.7; B, 5.5; C, 5.9; D, 5.5; E, 5.9; F, 5.9; grand average, 5.7.

It will be noted that the grand averages of the periods with and without oil are identical; namely, 5.7 per cent of the total nitrogen. Further particulars are given in table 2.

TABLE 1.—*Research Diet for the Women*

Food	Weight	Proteins	Fats	Carbohydrates	Total Calories
BREAKFAST					
Banana (without skin)	2½ oz. 70.875 Gm.	3.7 cal. 0.925 Gm.	3.8 cal. 0.425 Gm.	62.4 cal. 15.6 Gm.	69.7
Apple sauce.....	3 oz. 85.05 Gm.	1.3 cal. 0.33 Gm.	3.7 cal. 0.42 Gm.	76.9 cal. 19.23 Gm.	81.7
Instant Postum*..	1 tsp.	1 cal. 0.22 Gm.	1 cal. 0.11 Gm.	8 cal. 2 Gm.	10
Sugar.....	¾ oz. 21.262 Gm.	.....	.....	85.05 cal. 21.26 Gm.	85.05
Cream, 18.5%†.....	1 oz. 28.35 Gm.	2.84 cal. 0.71 Gm.	47.16 cal. 5.24 Gm.	5.08 cal. 1.27 Gm.	55
Skim milk.....	6½ oz. 184.275 Gm.	24.96 cal. 6.24 Gm.	5.22 cal. 0.58 Gm.	37.68 cal. 9.42 Gm.	67.65
Zo†.....	1 oz. 28.35 Gm.	15 cal. 3.75 Gm.	6 cal 0.66 Gm.	81 cal. 20.2 Gm.	102
Totals for meal.....		48.8 cal. 12.17 Gm.	66.88 cal. 7.43 Gm.	356.11 cal. 88.98 Gm.	471.1
DINNER					
Butter.....	1½ oz. 42.525 Gm.	1.6 cal. 0.42 Gm.	325.17 cal. 36.13 Gm.	.....	326.85
Whole wheat bread†	1½ oz. 42.525 Gm.	16.5 cal. 4.12 Gm.	3.0 cal. 0.33 Gm.	84 cal. 21 Gm.	103.5
Cabbage (raw)....	1½ oz. 42.525 Gm.	2.7 cal. 0.57 Gm.	1.21 cal. 0.13 Gm.	9.54 cal. 2.38 Gm.	13.35
Spinach (canned)†	3 oz. 85.05 Gm.	7 cal. 1.7 Gm.	19 cal. 2.1 Gm.	9 cal. 2.2 Gm.	35
Lemon juice.....	½ oz. 14.175 Gm.	.....	.....	5.52 cal. 1.38 Gm.	5.5
Baked potato (without skin)	5 oz. 141.75 Gm.	12.4 cal. 3.1 Gm.	1.35 cal. 0.15 Gm.	104.4 cal. 26.1 Gm.	118
Sugar.....	¼ oz. 7.087 Gm.	.....	.....	28.3 cal. 7.08 Gm.	28.3
Cream, 18.5%†.....	1 oz. 28.35 Gm.	2.84 cal. 0.71 Gm.	47.16 cal. 5.21 Gm.	5.08 cal. 1.27 Gm.	55
Skim milk.....	6½ oz. 184.275 Gm.	24.96 cal. 6.24 Gm.	5.22 cal. 0.58 Gm.	37.68 cal. 9.42 Gm.	67.65
Totals for meal.....		68.0 cal. 16.96 Gm.	402.11 cal. 44.63 Gm.	283.52 cal. 70.83 Gm.	753.15
SUPPER					
Zo†.....	1 oz. 28.35 Gm.	15 cal. 3.75 Gm.	6 cal. 0.66 Gm.	81 cal. 20.2 Gm.	102
Apple (edible portion)	4 oz. 113.4 Gm.	1.76 cal. 0.44 Gm.	5.04 cal. 0.56 Gm.	64.8 cal. 16.2 Gm.	71.2
Navy beans (dry)	2½ oz. 70.875 Gm.	63.7 cal. 15.92 Gm.	11.4 cal. 1.27 Gm.	168.9 cal. 42.2 Gm.	244.2
Cottage cheese†...	2 oz. 56.7 Gm.	47.3 cal. 11.81 Gm.	5 cal. 0.56 Gm.	9.6 cal. 2.42 Gm.	62.2
Cream, 18.5%†.....	1 oz. 28.35 Gm.	2.84 cal. 0.71 Gm.	47.16 cal. 5.24 Gm.	5.08 cal. 1.27 Gm.	55
Skim milk.....	6½ oz. 184.275 Gm.	24.96 cal. 6.24 Gm.	5.22 cal. 0.58 Gm.	37.68 cal. 9.42 Gm.	67.65
Sugar.....	½ oz. 14.175 Gm.	.....	.....	56.6 cal. 14.16 Gm.	56.6
Butter.....	½ oz. 14.175 Gm.	0.56 cal. 0.14 Gm.	108.3 cal. 12.04 Gm.	.....	108.9
Whole wheat bread†	1 oz. 28.35 Gm.	11 cal. 2.7 Gm.	2 cal. 0.22 Gm.	56 cal. 14 Gm.	69
Lemon juice.....	¼ oz. 7.087 Gm.	.....	.....	2.76 cal. 0.69 Gm.	12.7
Shredded lettuce..	2½ oz. 70.875 Gm.	3.4 cal. 0.85 Gm.	2.02 cal. 0.22 Gm.	8.2 cal. 2.05 Gm.	13.5
Totals for meal.....		170.52 cal. 42.59 Gm.	192.14 cal. 21.35 Gm.	490.62 cal. 122.61 Gm.	852.95
Totals for day.....		287.52 cal. 71.72 Gm.	661.13 cal. 73.44 Gm.	1,130.25 cal. 282.42 Gm.	2,077.2

* Calculations from Postum Cereal Company.
† Calculations from Kellogg, J. H.: The New Dietetics; other calculations from Rose: Laboratory Handbook for Dietetics.

The second consideration concerns the total reducing substances of the feces. It is interesting to note here that the percentage of these substances gradually diminished during the progress of the experiment in the case of all the subjects. Possibly the carefully selected diet, regular habits, and use of liquid petrolatum all together may have encouraged more complete digestion and

absorption of the carbohydrate food. The summary of the total reducing substances follows:

Average percentages of reducing substances before the experiment: A, 15.9; B, 15.8; C, 16.5; D, 16.7; E, 15.3; F, 12.7; grand average, 15.5.

Average percentages of reducing substances during the three periods without oil: A, 12.9; B, 12.6; C, 12.4; D, 13.3; E, 11.8; F, 11.8; grand average, 12.5.

Average percentages of reducing substances during the two periods with oil: A, 12.6; B, 11.6; C, 11.5; D, 13.3; E, 11.8; F, 13.4; grand average, 12.4.

The grand average of the total reducing substances before the experiment was 15.5 per cent, for the three periods without oil, 12.5, and for the two periods with oil, 12.4 per cent, showing less waste of reducing substances during the research. Further details of these analyses are given in table 2, of which Dr. Lewis, who

The weights before and at the end of the experiment were as follows:

A before research, 117 pounds; after, 114¼ pounds; loss, 2¾ pounds.

B before research, 139¾ pounds; after, 136¾ pounds; loss, 3 pounds.

C before research, 139 pounds; after, 141½ pounds; gain, 2½ pounds.

D before research, 106 pounds; after, 104¼ pounds; loss, 1¾ pounds.

E before research, 121½ pounds; after, 120 pounds; loss, 1½ pounds.

F before research, 127½ pounds; after, 122 pounds; loss, 5½ pounds.

Five out of the six lost weight during the experiment, but there is no evidence that the taking of oil had anything to do with this loss. For healthy, active young

TABLE 2.—*Analyses of Feces in Human Beings*

		A		B		C		D		E		F		
Date, 1926		Total Nitrogen, per Cent	Total Reducing Substances, per Cent	Total Nitrogen, per Cent	Total Reducing Substances, per Cent	Total Nitrogen, per Cent	Total Reducing Substances, per Cent	Total Nitrogen, per Cent	Total Reducing Substances, per Cent	Total Nitrogen, per Cent	Total Reducing Substances, per Cent	Date	Total Nitrogen, per Cent	Total Reducing Substances, per Cent
3/15	No oil	5.8	17.1	5.8	12.7	5.6	16.1	5.8	17.3	5.6	16.6	2/21	6.6	11.8
3/16		5.3	15.9	6.0	16.7	5.7	18.6	5.7	17.6	5.2	16.1	2/24	7.3	13.0
3/17		5.8	14.6	5.8	18.1	5.8	14.9	5.7	15.1	5.8	13.2	2/25	6.2	13.2
Aver.		5.6	15.9	5.9	15.8	5.7	16.5	5.7	16.7	5.5	15.3	3/3	6.0	12.6
												3/7	5.8	12.9
												Aver.	6.4	12.7
Grand total nitrogen average before experiment.....							5.8%							
Grand total reducing substances average before experiment							15.5%							
3/21	Oil	5.8	15.2	...	13.3	5.6	13.1	5.5	13.9	6.1	12.7	3/11	6.3	14.9
3/25		5.6	13.5	4.7	10.9	5.6	14.3	5.7	11.0	5.7	14.5	3/15	5.9	14.9
3/29		5.9	16.5	5.6	13.4	6.4	10.0	5.9	12.9	5.9	11.9	3/18	5.8	11.7
4/3		5.6	11.8	5.7	14.2	5.8	12.1	5.6	13.8	6.0	13.5	3/22	6.7	13.4
4/8		6.2	....	6.2	9.7	6.0	10.7	5.6	12.0	5.4	11.8	Aver.	6.2	13.7
Aver.		5.8	14.2	5.6	12.3	5.9	12.0	5.7	12.7	5.8	12.9			
4/12	No oil	5.8	9.9	5.3	12.1	...	....	5.6	10.9	5.5	11.0	3/29	5.6	13.5
4/17		5.6	14.3	5.4	10.7	6.1	10.0	5.4	12.5	5.8	11.1	4/3	6.0	11.6
Aver.		5.7	12.1	5.4	11.4	6.1	10.0	5.5	11.7	5.7	11.0	4/8	5.9	11.4
												Aver.	5.8	12.2
4/21	Oil	5.6	10.9	5.3	11.5	6.1	10.7	5.5	14.1	5.9	10.3	4/12	5.0	13.9
4/25		5.4	10.9	5.3	10.4	5.6	11.2	5.0	13.7	5.9	11.0	4/17	6.0	12.5
Aver.		5.5	10.9	5.3	11.0	5.9	11.0	5.3	13.9	5.9	10.7	Aver.	5.5	13.2
4/29	No oil	5.9	10.9	5.7	10.5	6.3	10.0	5.5	12.3	5.9	10.2	4/21	5.9	10.6
5/1		5.7	10.2	5.1	10.7	5.6	11.1	5.7	10.9	5.5	9.7	5/22	5.8	10.1
Aver.		5.8	10.6	5.4	10.6	5.9	10.6	5.6	11.6	5.7	10.0	Aver.	5.9	10.4
No oil average..		5.7	12.9	5.6	12.6	5.9	12.4	5.6	13.3	5.7	12.1		6.1	11.8
Oil average.....		5.7	12.6	5.5	11.6	5.9	11.5	5.5	13.3	5.9	11.8		5.9	13.4
Grand no oil average.....		5.7	12.5											
Grand oil aver..		5.7	12.4											

aided in its preparation, states that the analysis of the feces was carried out on the dry, fat-free material. The feces were dried in a vacuum desiccator at from 100 to 115 C. to constant weight and then extracted with ether for from fourteen to sixteen hours. Several checks on the completeness of extraction showed that they were extracted in four or five hours, but they were allowed to remain in the ether over night in order to assure complete extraction. All fecal specimens, both from the students receiving oil and from the controls, were subjected to the same treatment, so that the analyses are comparable under the same conditions. Total nitrogen was determined by the Kjeldahl-Gunning method, 0.5 Gm. of material being used. Good duplicates were obtained throughout. Total reducing substances were determined by the Folin and Wu blood sugar method. The specimen was first hydrolyzed with 2 per cent hydrochloric acid in the autoclave at 15 pounds pressure for thirty minutes, and then neutralized and made up to a known volume. After precipitation with sodium tungstate and two-thirds normal sulphuric acid, the solution was filtered and made up to the proper volume.

women 2,070 calories is a small daily ration, although it was all they would undertake to eat daily for such a long period. But even then, except in the case of the man who took about 25 per cent more food, the loss of weight was so small that it is barely worth mention. One of the women actually gained 2½ pounds.

As regards their general health, physical comfort and well being, there was no complaint. None felt starved, and all reported the diet to be satisfying. Most of them thought that they were in a little better state of health and somewhat more comfortable at the end of the study.

Motility.—In regard to intestinal motility, liquid petrolatum given by mouth did not have any marked or sustained effect on the two dogs which received it daily for three separate periods of about one month each. During the periods in which they received oil, these dogs showed a bowel motility varying from thirteen to eighteen hours, while the motility of the control dog which did not receive oil at any time remained practically stationary at eighteen hours, exceeding that time by an hour on only two or three occasions. But at no time did the motility of this control dog fall below

eighteen hours. There was a definite change in the character of the stools when the two dogs were given the oil ration of 20 cc. daily. The feces became more moist and showed a uniformly mushy consistency while the dogs were taking oil. Further, these dogs were constipated after the second oil period, the motility being lengthened to forty hours for both dogs, while the motility of the control dog was normal, i. e., eighteen hours. With this exception, the motility of dogs 1 and 2 was only slightly longer during the periods when no oil was administered than when oil was given.

The lubricating and laxative effect of the liquid petrolatum on human intestinal motility was generally mild, and in some cases scarcely noticeable, which is just what one might expect in healthy young women with ordinary bowel activity. Most of them reported freer bowel action and less gas and odor during the periods in which oil was taken. The usual bowel movements were one or two daily, never less, and rarely more.

C, the woman who gain 2½ pounds, found the oil very difficult to take, complained of nausea from it, and on one occasion vomited after supper.

B reported "very little or no gas" and freer and more natural movements while taking the oil.

It seems fair to conclude as far as this research is concerned that the taking of liquid petrolatum daily in therapeutic doses with the food, both in human beings and in dogs, did not increase the waste nitrogen or reducing substance in the feces. In other words, the research did not produce any evidence that the use of liquid petrolatum taken by mouth before or with meals in any obvious way interferes with the digestion or absorption of food as far as the loss of protein or carbohydrate in the feces is concerned. It will be noted that the results of the experiment on dogs closely paralleled those in the human beings. During the periods when the oil was given with each meal, the amount of nitrogen and reducing substance in the feces was not increased.

SUMMARY

1. Laboratory dogs with one meal a day have only one regular stool daily with an average motility of about eighteen hours.

2. The feces of the dogs uniformly contained large quantities of hair, which may serve a useful purpose as roughage and may be useful in stimulating peristaltic activity of the bowels.

3. The use of muzzles to prevent the eating of the hair not only worried the dogs but also seemed to cause constipation.

4. From the experiments on dogs it would seem that the use of liquid petrolatum given by mouth does not interfere with the digestion or absorption of protein food as judged by the fecal waste of nitrogen.

5. While the students considered their bowel action normal before the experiment, the fact is that all of them had a varying degree of constipation. In most cases the oil encouraged better action and produced softer and more natural stools, although the effect was comparatively mild.

6. The taking of 15 cc. of liquid petrolatum with meals three times a day did not appear to upset, hinder or in any other way interfere with the digestion and absorption of the food as judged by the nitrogen and carbohydrate waste eliminated by the stools, nor did it affect appetite.

7. The amount of nitrogen waste as determined by fecal analysis was not increased when the students were taking liquid petrolatum with each meal, but remained practically the same.

8. What is true of the nitrogenous waste holds also for the carbohydrate elimination. Analysis shows that the amount of reducing substance in the feces is not increased by the taking of liquid petrolatum.

9. The results of both experiments, in dogs and in human beings, indicate that the taking of liquid petrolatum by mouth in therapeutic doses did not interfere with the digestion and absorption of protein and carbohydrate food.

CLINICAL OBSERVATIONS ON THE USE OF INTRAVENOUS DIGITALIS PREPARATIONS*

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Three years ago[1] it was possible to report certain facts about the action of the commonly used hypodermic digitalis preparations which indicated that the dosage of these preparations must be revised. The potency of these preparations was tested by noting the degree of the effect produced on the electrocardiogram of patients to whom the drug had been administered. By this method it was found that the doses commonly used produced only the slightest effect, or none that is demonstrable, on the heart. This is a serious matter for the therapeutist, for these drugs are used in the emergencies of surgical and medical practice when it is most important that all the power which a drug can give should be made available for use.

It was found that the liquid preparations available in ampules, i. e., digitan solution, digifolin[2] and digalen, were no more potent in their action on the heart after intravenous administration than an equal volume of tincture of digitalis given by mouth, though the effects after intravenous administration appeared more promptly. The hypodermic tablets of digitalin (amorphous) made by Burroughs Wellcome & Company, were of such a potency that instead of the maximum dose being $\frac{3}{100}$ grain, it would seem that it should be $\frac{8}{100}$ grain. The doses of these preparations recommended in the original paper for emergency intravenous use are shown in the accompanying table, and it will be appreciated at a glance that if these doses are correct then those ordinarily used are far too small to be useful to patients in need of emergency cardiac stimulation. The doses in the table are half of the estimated full therapeutic dose as previously reported.

Recommended Intravenous Dosage for Patients Who Have Not Previously Received Digitalis

Digalen Digifolin solution Digitan hypodermic solution	1 minim per pound of body weight
Digitalin tablets (amorphous)	B. W. & Co. $\frac{1}{100}$ grain per 18 pounds of body weight

The first question of the practitioner will naturally be, "Are such doses safe?" This can only be answered

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* From the Electrocardiographic Department of the New York City Hospital.
* Read before the Section of Medicine of the New York Academy of Medicine, Feb. 21, 1928.

1. Pardee, H. E. B.: Hypodermic Digitalis Preparations, J. A. M. A. **85**: 1359 (Oct. 31) 1925.

2. Digifolin was found unacceptable for New and Nonofficial Remedies because of unwarranted claims (Reports of the Council on Pharmacy and Chemistry, 1921, p. 62).—ED.

by the statement that in the course of my hospital and private experience during the last three years and while engaged in the experiments reported in this paper, these doses have been administered to a considerable number of patients. In no case has any unpleasant toxic effect been observed when the patient had not received any digitalis during the previous two weeks. In two patients who had received digitalis unknown to the physician administering the intravenous dose, vomiting and premature beats were produced.

If these doses are safe and proper, then the physician or surgeon should know how soon to expect a result and how soon subsequent doses should be given. It is the object of this paper to set forth the answers to these questions which have been found while observing the effect of an intravenous dose on the rapid heart rate of patients with auricular fibrillation. The slowing of the heart rate as such patients come under the influence of digitalis is a simple and graphic method of observing the onset of the digitalis action.

Patients were selected who had not previously been treated by digitalis or who had not received any for more than two weeks. The patient was kept in bed and the heart rate was counted by stethoscope. Three or four counts during the five minutes before administration of the drug were averaged to obtain the control rate, and frequent counts were made after the administration. Only the three liquid preparations mentioned have been tested in this way, and each dose was 1 minim of the solution per pound of body weight, so that from 90 to 180 minims (from six to twelve ampules of 1 cc. each) were given to different patients. The only precaution observed was for one to inject the solution slowly, taking thirty or forty-five seconds to complete the injection so that it would mix well with the blood and not arrive at the heart in great concentration. If a hypodermic needle is used for the intravenous injection, it is not possible to inject too rapidly.

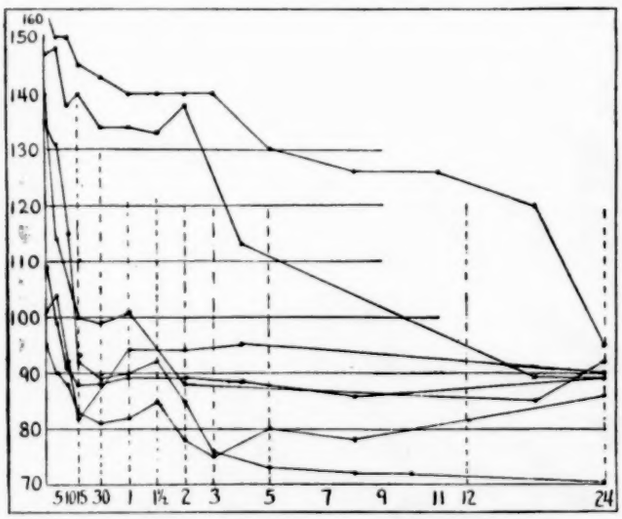

Chart 1.—Effect of digalen given intravenously on the heart rate of patients with auricular fibrillation. The rate is shown by the height above the base line; time is indicated along the base line.

In most cases the patients were in distress from dyspnea, and sometimes also they were troubled by palpitation; these symptoms uniformly improved when the heart rate fell to 80 or 90 a minute. Dyspnea did not always disappear but was much relieved.

The three charts show graphically the marked effect on the heart rate after these doses, and the remarkable promptness with which the slowing begins. There is usually a definite slowing by five minutes after administration, a marked slowing by fifteen minutes and a still greater decrease by thirty minutes. From then until two or three hours after the administration, the rate becomes slightly slower and remains about at this level for the next twelve or twenty-four hours, perhaps increasing slightly toward the end of the period. Different patients show some variation from this average curve but on the whole it seems that this is a fair representation of the rate of onset of the effect of the intravenous dose, and it is probable that this rate of onset is similar in all patients whether or not they have auricular fibrillation.

Chart 1 shows the results obtained with digalen. Two patients were unusually resistant to the action of the drug. Even these two showed some slowing of the rate during the first fifteen minutes and progressively thereafter, but the majority of the patients showed a marked drop in the rate by fifteen minutes after administration and usually a still further slowing during the first and second hour. Chart 2 shows the tests with digitan solution. No resistant patients were found in this group. In each case there is a considerable drop in the rate by thirty minutes after the administration and a further slowing by the second or third hour. Chart 3 shows the tests with digifolin solution. Two patients showed an initial fall in rate but with unusual resistance to the later slowing effect. All of the others showed the usual sharp drop in rate in from fifteen to thirty minutes and a further drop by the second or third hour. These preparations act similarly, and, though it would appear that the digalen acts more promptly and produces greater slowing, yet the difference is only slight.

The finding of patients who are resistant to the effect of digitalis is common in carefully controlled experiments with digitalis preparations, and has usually been attributed to imperfect absorption. It is plain that with these intravenous preparations absorption cannot be a factor and that the susceptibility of the patient must be the variable. It is quite possible that the variable results after oral administration have a like origin and that either these patients need more digitalis to produce a given effect or their hearts cannot be influenced by the drug in any dose.

Experiments have also been made to determine how promptly the typical effect on the T wave of the electrocardiogram makes its appearance after similar doses of the intravenous preparations. This work has been done by Dr. George Friedman, and the records have not yet been studied in detail. It appears, however, from a preliminary survey that the effect on the T wave appears as a rule between two and four hours after the administration of the drug intravenously.

The intravenous administration of strophanthin has been tested in a similar way by Wyckoff and Goldring.[3] They found that the slowing of the heart rate in patients with auricular fibrillation appeared "in from five to twenty minutes" and the maximum effect of one dose "in from fifteen to fifty minutes." The earliest effect observed did not occur any sooner than with the digitalis preparations but the maximum effect after strophanthin was said to come more promptly—one hour with strophanthin, as contrasted with two hours after the digitalis preparations. Wyckoff and Goldring did not follow their patients for two or three hours after a single dose, so it is not impossible that they may have

3. Wyckoff, John; and Goldring, William: The Intravenous Injection of Ouabain in Man, Arch. Int. Med. **39**: 488 (April) 1927.

missed the further slowing which is seen in charts 1, 2 and 3 at that time. If these charts are covered up beyond the one hour observation, it appears as if the maximum effect were at fifteen to thirty minutes.

It is well to call attention, by way of comparison, to the time of onset of digitalis action after oral and rectal administration. Canby Robinson,[4] in 1920, gave the

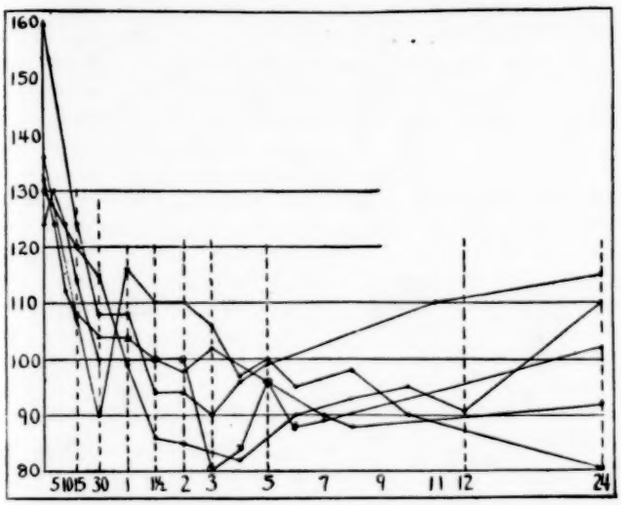

Chart 2.—Effect of digitan solution given intravenously.

full therapeutic dose of tincture of digitalis to a series of twenty-six patients with auricular fibrillation and observed the initial slowing of the rate within from two to five hours. The maximum effect appeared from seven to fifteen or twenty-four hours after administration.

In 1920 I [5] attempted to find the time of onset of the digitalis effect on the heart muscle, using the change in the T wave of the electrocardiogram as a guide. A dosage of 1 minim of tincture of digitalis per pound of the patient's weight was used and an effect was noted on the T wave in from two to four hours after the administration. This is in agreement with Canby Robinson's observations as to the time of the onset of the effects of digitalis, though he used a different index of activity.

In 1924 Levy [6] gave digitan solution by rectum in doses of from 8 to 20 cc., and observed a slowing of the heart rate of patients with auricular fibrillation after an average of two and one-half hours and the maximum effect after an average of nine and one-half hours. He also studied the change in the T wave and found the initial effect after an average of two and one-half hours.

It is plain that the intravenous injection gives a prompter effect on the heart rate of auricular fibrillation than does the oral or rectal administration of analogous or even larger doses. There is not much difference as far as the speed of their activity is concerned between the three intravenous preparations of digitalis. Possibly strophanthin may be slightly quicker in action than any of them, but this is not certain. It seems fair to consider that the appearance and degree of the slowing of the heart rate after these various methods of dosage is a guide to the rate at which the digitalis takes effect on the heart.

4. Robinson, G. C.: Rapidity and Persistence of Action of Digitalis on Hearts Showing Auricular Fibrillation, Am. J. M. Sc. **159**: 121 (Jan.) 1920.
5. Pardee, H. E. B.: The Rate of Absorption of Digitalis from the Gastro-Intestinal Tract, J. A. M. A. **75**: 1258 (Nov. 6) 1920.
6. Levy, R. L.: Rectal Digitalis Therapy, Arch. Int. Med. **33**: 742 (June) 1924.

As to the clinical use of these observations, there is, in my opinion, no apparent reason for using the intravenous preparations in any patient with heart failure unless the patient is so seriously ill that very prompt results are necessary, or unless the patient cannot retain digitalis by mouth or by rectum.

The dosage should be regulated by the patient's normal weight and by the amount of digitalis which he has taken during the previous two weeks. For a patient who has not had digitalis within this time, the dose of these intravenous digitalis preparations should be 1 minim per pound of the patient's weight, if a prompt and definite effect is desired. This is one half of the estimated full therapeutic dose and is as much as should be given for fear of producing marked signs of poisoning in occasional especially susceptible persons.

Should the first dose not produce clinical improvement in two hours, I would give another dose one-fourth the size of the first (¼ minim per pound of body weight), and would repeat this at two hourly intervals if no clinical improvement or no signs of toxic digitalis action were observed. Only four of these subsequent doses should be given, however, for it is not safe to exceed the average full therapeutic dose when dealing with very sick patients. In such patients, severe toxic effects may set in before clinical improvement and the toxic effects may not be recognized in the moribund patient.

Great caution is necessary in giving full doses of digitalis to patients who are critically ill. It should never be given as here recommended unless the physician is present before each dose to determine that there are no toxic effects from the previous doses. Slowing of the heart is of course a well recognized toxic effect of digitalis, but it is not so well realized that acceleration of the heart or the onset of irregular heart action may also be a toxic digitalis effect. If the heart of a sick patient becomes more rapid or becomes irregular, the

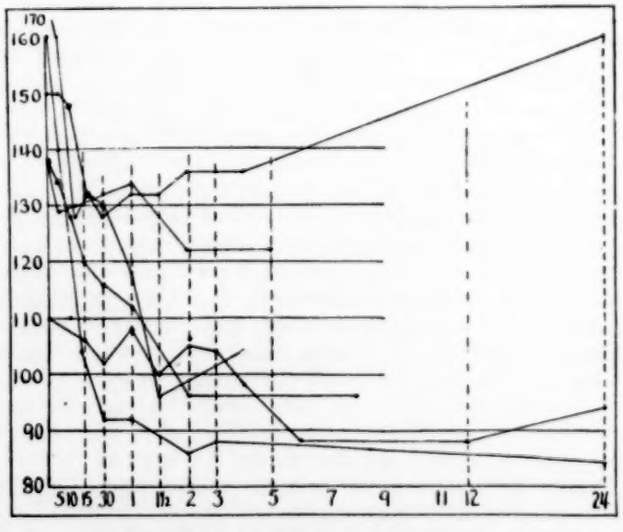

Chart 3.—Effect of digifolin given intravenously.

physician might possibly attribute this to the cardiac condition becoming worse. This may indeed be so; but if considerable amounts of a digitalis preparation have been given to the patient, it may be a sign of toxic action and indicate cessation of digitalis rather than its continuation.

Should the first dose produce clinical improvement and the patient still be urgently ill after four hours, a

dose one-fourth the size of the first may be given and if clinical improvement progresses, six hours or more may be allowed to elapse before the third dose. With continued improvement oral administration may now be used and the dosage regulated according to the apparent need for digitalization.

I would prefer the intravenous digitalis preparations to strophanthin because of their wider margin between the slight and the marked toxic dose. If, however, it is desired to use strophanthin, the average full therapeutic dose was found by Wyckoff and Goldring [3] to be 0.0067 mg. per pound, or 1 mg. for a patient weighing 150 pounds. They found it safe to give 0.5 mg. as an initial dose and recommend repeating 0.1 mg. every half hour until therapeutic or toxic signs make their appearance. They have not had any unpleasant toxic effects from using this method, though ventricular premature beats and vomiting occasionally occurred.

When a patient who has recently been receiving digitalis is found to be in a condition demanding intravenous therapy, the problem of dosage is extremely difficult. There is no way of telling how much of the full therapeutic dose of digitalis is active within the patient. We must proceed slowly in order to keep short of a strongly toxic dose. It is plain from the charts that the strong initial effect of these digitalis preparations will have appeared by thirty minutes after administration, so it seems proper to give the small dose recommended, ¼ minim per pound of body weight, and to repeat this at thirty to forty-five minute intervals until a therapeutic or toxic effect is produced or until four doses have been given. This will represent the initial dose of 1 minim per pound and the patient will have received it in from one and one-half to two and one-half hours. One should proceed after this as has been described, repeating the dose according to indications at from two to four or six hour intervals, or changing to oral administration if clinical improvement has set in.

It may be worth while to say a word as to the result of using smaller doses than those recommended in patients without previous digitalis medication. Doses of from 15 to 30 minims (1 to 2 cc.) produce a very slight, just perceptible effect on the heart rate of patients with auricular fibrillation and usually do not produce any effect, or only the slightest, on the T wave of the electrocardiogram. As a therapeutic procedure I feel that such doses of these solutions in previously untreated patients are quite inadequate for the treatment of an emergency condition. In previously treated patients a dose of 30 minims may produce definite though slight slowing of the heart rate and may have some therapeutic effect. This dose may be close to the ¼ minim per pound of body weight dosage recommended for the continuation of treatment, and should be repeated as already described.

Some will, of course, hesitate to use doses of the size recommended intravenously. However, it should be remembered that some years ago there was just as much hesitation about using doses of this size by mouth. There has been enough experience with this intravenous dose of 1 minim per pound to make it plain that in previously untreated patients it is quite safe, and I do not hesitate to recommend it for producing a prompt effect in any emergency in which digitalis is indicated.

If it seems preferable to approach this seemingly radical dosage by a gradual process, a dose of ¼ minim per pound may be used, to be repeated at forty-five minute intervals for four doses and then, if digitalis is still needed, every two or three hours, the physician observing the patient for toxic effects before each dose but never giving more than a total of eight of these doses.

Finally, a word should be said as to the relative value of the intravenous, the intramuscular and the hypodermic methods of administration. Clarke [7] found that a 27 per cent larger dose was needed to produce mild toxic effects when digifolin was given intramuscularly than when it was given intravenously. It is obvious that by the intravenous method the drug reaches the blood stream immediately. When the circulation is normal, the absorption of an intramuscular injection will be delayed only for a minute or so, but the more the circulation is impaired, the more slowly will an intramuscular injection be absorbed. This delay is even greater after hypodermic injections, so that the more need there is to obtain an effect, the more one should strive to give the drug by the intravenous route. Sometimes in these very sick patients it is difficult to insert a needle into a vein, but I feel certain that one should use one's best efforts to do so because of the possible delay in absorption from an intramuscular or a hypodermic injection.

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THE GROWTH-PRODUCING EFFECTS OF EXTRACTS OF TOBACCO ON MICE *

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Experimental carcinoma has been produced through the medium of x-ray, coal tar, various paraffin oils, arsenic, soot, wood tar, and parasites. In the latter case it is seen that the parasitic tumors were obviously due to the chronic irritation set up by the parasite. I refer only to the two well established experiments: first, that of Fibiger, who produced carcinoma of the stomach in rats by the feeding of cockroaches infected with the nematode worm *Spiroptera neoplastica* and, second, sarcoma in the liver of rats produced by Bullock and Curtis through feeding them the *Taenia crassicollis* of cats.

Atypical proliferation not progressing to malignancy has been produced by injections in the ears of rabbits of scharlach r, constituents of certain aniline dyes and the cleavage products of albumin, such as indole and skatole.

Only one instance wherein the use of tobacco tar produced any atypical epithelial proliferation could be found in the literature. Wacker and Schmincke, in 1911, used the tar obtained from tobacco pipes mixed with oil and produced an atypical proliferation in rabbits' ears. Since then no work has been found in which tobacco tar has been used.

The high incidence of faucial and laryngeal carcinosis in men smokers as compared to the marked infrequency in women, as well as the rarity of epithelioma of the lip in women, suggested a relationship between tobacco

7. Clarke, N. E.: A Comparative Study in Digifolin Administration, Am. J. M. Sc. **168**: 201 (Aug.) 1924.

* From the Department of Pathology, University of Kansas School of Medicine.
* Read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

tar and epithelioma. Cases of epithelioma in pine tar workers suggested that vegetable tars might contain a cancer-producing factor. This was later proved to be true after malignant tumors were produced in mice by the application of this tar.

The well known kangri cancer among Indian natives, apparently caused by the carrying of a fire pot against the abdomen and thighs, has been recognized for a long time, which makes it strikingly significant, since epithelioma in this region is so unusually rare. The betel nut, which is a mixture of betel nut, tobacco and spices, chewed by the natives of Madras, Ceylon and the Straits Settlements, is thought to cause epithelioma in the floor of the mouth, seen so commonly where this material rests against the mucous membrane.

So far as I know, no one has ever published the results of tobacco tar painted on the skin of mice in an attempt to produce epithelioma.

With these foregoing facts in mind, I began in 1925 on an experiment of this nature. In order to familiarize myself with the technic and early recognition of the changes that might result, it was thought best to duplicate some of the work done with soot. Typical "chimney sweeps'" warts, which progressed to malignancy, were produced in mice by painting the backs of their heads with soot extract, according to the method of Kennaway and Passey. A strain of albino mice of low spontaneous cancer incidence was chosen, and it was possible to produce typical infiltrating squamous cell epithelioma with this product. A small series of fifteen mice were chosen. At the end of three months from the beginning of the experiment, five of the fifteen mice had developed warts and four had died of intercurrent infections without trace of either warts or other evidence of tumor. In the following month eight of these eleven had died, leaving three with warts. One of these subsequently died, not going on to malignancy. The warts of the other two mice grew very rapidly during the ensuing month and at the end of this time both were very large, ulcerating, fungating masses. A biopsy from one showed a typical squamous cell epithelioma. After the biopsy this animal died and there were no metastases. The other animal lived for a month longer and died with an enormous ulcerating cauliflower mass covering the entire top of his head and shoulders, which tumor was typically malignant.

I then duplicated the work of Wacker and Schmincke, taking the tobacco tar from the bowls of briar pipes and mixing the ethereal extract with olive oil. This product was injected in the skin of rabbits' ears and atypical proliferation took place, but never an actual malignant transformation. On one of the rabbits, a biopsy was done after four months, and even here a large keratinized mass surrounded by epithelium was seen. Also, the proliferation in one rabbit was so marked as to break through the cartilage, but it was not progressive; nor were subsequent injections ever capable of producing a limitless growth.

Mice were chosen because of the well known fact that they are particularly susceptible to irritation tar neoplasms, in contradistinction to rats. Tar is used on rats with no success, but in mice some men have been able to produce an incidence of tumors approaching 100 per cent. Systematic painting of the backs of the heads of mice was begun with an ethereal extract of tobacco tar. This tar was extracted from briar pipes. A large series of mice were painted and it was found that the product was highly toxic. The nicotine was therefore extracted by shaking with diluted hydrochloric acid. This product was found to be nontoxic. Fifty mice were painted three times a week over a period of almost one year. It was thought best to epilate the hair with barium sulphide and the painting was started. Ulceration of a rather marked degree was produced and at intervals sections were taken from these ulcers, but no atypical growth was ever encountered. In some cases in which the ulceration was too severe, the painting was reduced to once a week until the ulceration partially healed.

At this time I communicated with Dr. Archibald Leitch, director of the Cancer Hospital Research Institute in London. He had been having striking results with various tars and oils. To my surprise, I learned that he had been trying a similar experiment to mine, producing his tar by artificial "smoking." This he accomplished by putting tobacco in a Buchner filter funnel attached to flasks acting as condensers, which were in turn attached to a filter pump. He produced a chloroform-soluble tar which caused ulceration but no epithelial proliferation. He felt, however, that an effective product could be obtained with a higher temperature of combustion. The idea was already in my mind, as I knew of his experiments with high temperature coal tar distillates.

I made a large iron combustion still and heated tobacco to a temperature of between 400 and 500 C. The resulting tarry product was extracted with ether and chloroform and the two extracts were applied to a series of fifty mice. As in the former case, nothing but ulceration resulted. This product was not toxic after the nicotine had been extracted but was very irritating. The ulceration was very extensive in some cases, and painting had to be suspended from time to time. This was carried on for about eight months. Most of the mice lost weight and died of pneumonia. In none of this series was any atypical epithelial growth encountered. When the painting was suspended, the ulcers healed promptly. No warts were produced.

CONCLUSIONS

1. Tobacco tar obtained at temperatures produced by smoking pipes does not seem to contain any carcinogenic factor capable of producing limitless growth of epithelium in mice. It causes extensive ulceration, which heals promptly on removal of the irritant.

2. Combustion products of tobacco distilled over at temperatures between 400 and 500 C. apparently act similarly to those found in pipe smoking.

3. Tobacco tar when mixed with olive oil seems to possess a factor that will cause atypical epithelial proliferation; but the growth is limited and disappears by spontaneous involution.

Mental Attitude of Patient.—The physician in his contacts with patients who have more or less lost their physical or psychical stability is, I believe, today more lacking than in the past in a sympathetic appreciation of the intense, though it may be utterly illogical, mental attitude of the patient. Not finding help for his troubles in treatment rendered by the highly educated and most knowledgeable modern physician, the patient reverts to primitive savage instincts, mysticism, charms, amulets, religious rites, modern voodooism of all sorts, for relief. And, since such relief is in great demand, there have sprung up all kinds of modern witch-doctors who promise that relief for a price. There is no doubt that many times they do bring relief to the disturbed mind which might have been better relieved by the physician himself had he taken thought.—Wilson, L. B.: *Minnesota Med.* **11**:365 (June) 1928.

PRESENT-DAY TREATMENT OF INTESTINAL PROTOZOIASIS AND FACTORS THAT DETERMINE ITS EFFICACY

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In the form in which it occurs in nontropical regions, intestinal protozoiasis is a type of parasitosis which has received scant attention from clinicians. The recognition and classification of protozoa have been left largely to zoologists, whose clinical contacts have been limited or wholly lacking. A few fortunately situated pathologists and internists have studied protozoa in their relation to human disease production. Their researches have given us an important literature. Commonly, however, these observers have been located in tropical or subtropical lands, where protozoan infestation has been outstanding as a cause of incapacitation of soldiers or of laborers, and thus the disease has presented an acute problem in sanitation. In consequence of the early writings which dealt with endemic protozoiasis or its epidemic-like distribution, medically, the impression generally held is that intestinal protozoiasis is associated with an acute or prostrating form of disability, limited chiefly to peoples beyond the boundaries of the temperate zone. Thus, the infestation, while an interesting thing to know about, has been thought not greatly to concern the internist practicing outside the tropics.

Widespread interest in protozoiasis was, however, stimulated by the reports of Walker and Sellards.[1] These investigators showed that so admittedly pathogenic a protozoan as *Endameba histolytica* could be isolated from the alimentary tracts of apparently healthy persons, and that this organism later could become pathogenic when introduced into the alimentary tracts of susceptible individuals. During the World War, numerous investigators abundantly confirmed the statements of Walker and Sellards. Also, they presented a mass of evidence demonstrating the wide distribution, geographically, of species of protozoa in the human family. Craig[2] states that approximately 10 per cent of the inhabitants of the United States harbor *Endameba histolytica,* while only relatively few of these carriers develop so-called amebic dysentery. Of 3,780 patients whose stools were carefully examined for protozoa in my clinic, various protozoa were isolated[3] from rather more than 7 per cent.

It is apparent that the clinical conception of intestinal protozoiasis and of the significance of protozoa needs radical revision. While clinicians in the temperate zone deal relatively rarely with the acute aspects of the condition, there is a great group of patients presenting subacute or chronic disability from infestation. Many may be said merely to be "carriers," but, in the main, it cannot be denied that chronic limitation of function occurs even in carriers or in those harboring a mildly active protozoiasis. Furthermore, at any time, the chronically infected host may present an acute flare-up of disabling intensity. In such circumstances, unless internists generally are alive to the clinical possibilities of protozoiasis, patients may be treated over long periods for "idiopathic ulcerative colitis," "nervous diarrhea," "hepatitis and pancreatic insufficiency," "achylia gastrica," "intestinal tuberculosis," "latent malignancy" or "bacillary dysentery."

This report is concerned with the clinical management of disability concomitant with the presence of the vegetative forms of the following protozoa: *Endameba histolytica, Balantidium coli, Giardia, Trichomonas* and *Chilomastix mesnili.* The significance of encysted protozoa also will be mentioned. While these organisms cannot always be regarded as pathogenic, they are considered parasitic. In this opinion, I but subscribe to the definition of parasitism given by Fantham, Stephens and Theobald,[4] and concurred in by Craig:[2] "By the term parasites is understood living organisms, which, for the purpose of procuring food, take up their abode, temporarily or permanently, on or within other living organisms."

Before considering freeing the human alimentary tract from protozoa, it would seem proper that one had clearly in mind not only the nature of the protozoan but the effects of each species when present as a parasite.

PATHOGENICITY

The organisms already mentioned have been roughly divided into "tissue-invaders" and "lumen-dwellers." It would appear that those protozoa which become tissue-invaders are first present in the lumens of the bowels. The frank lumen-dwellers would seem to be those organisms which have not, themselves, the capacity for invading tissues, but which, should they come into contact with ulcerated mucosal surfaces or become embedded in the walls of ulcers, are able to live and perhaps there do more harm than is suspected. Commonly, the tissue-invaders have been styled "pathogenic protozoa," while the lumen-dwellers have been classed as "nonpathogenic protozoa." While this is a convenient and simple classification, yet, as will be mentioned, evidence appears to be accumulating toward proof that, in certain circumstances, the previously considered nonpathogenic lumen-dwellers may produce injury and dysfunction.

Of the protozoa cited, *Endameba histolytica, Balantidium coli* and possibly *Giardia* represent tissue-invaders. The lumen-dwellers are such flagellates as *Trichomonas* and *Chilomastix.*

HABITAT

With the exception of *Giardia,* as commonly described, protozoa inhabit the terminal ileum and the colon. They are apt to be more numerous at points of normal physiologic stagnation in the intestine—the ileum, proximal to the ileocecal valve, the cecum, the descending colon and the sigmoid. *Giardia* may inhabit any portion of the small or large bowel, but appears to thrive most luxuriantly in the jejunum and duodenum. Blind pouches, communicating with the intestine, readily become densely infested with protozoa; hence, active colonies may be observed in the appendix, in intestinal diverticula or at the bases of penetrating intestinal ulcers. Later I shall show proof that several protozoa, hitherto considered as inhabitating only the intestinal canal and its appendages, can find their way into the biliary tract. As early as 1912, I[5] demonstrated viable *Trichomonas* in gastric contents.

THE EFFECTS OF INTESTINAL PROTOZOA

The tissue-invaders, such as *Endameba histolytica* and *Balantidium coli,* exert their harmful influence in

1. Walker, E. L., and Sellards, A. W.: Philippine J. Sc. **8**: 253, 1913.
2. Craig, C. F.: A Manual of the Parasitic Protozoa of Man, Philadelphia, J. B. Lippincott Company, 1926.
3. Smithies, Frank: Am. J. Trop. Med. **6**: 1 (Jan.) 1926.
4. Fantham, H. B.; Stephens, J. W. W., and Theobald, F. V.: The Animal Parasites of Man, New York, William Wood & Co., 1920.
5. Smithies, Frank: Am. J. M. Sc., July, 1912, p. 82.

two ways: first, by penetration into the mucosa and the wall of the intestine, at which sites they are capable of ingesting red cells and destroying tissue, and, second, by encystment within tissues or in pouches accessory to the bowel. Such cysts may live for a long time; when, later, they mature, the trophozoites accelerate local tissue destruction or pass into the blood or lymph streams and are distributed to distant foci, such as joint capsules, the testes, the brain, lymph nodes or the liver.

Thus, it is seen that the problem of treatment is concerned not only with freeing the intestinal canal of cysts or of parasites at the vegetative stage, but, what would appear to be more important, with destroying viable organisms which have already become established in extra-enteric structures.

To prevent extensive local bowel or systemic injury, it is extremely urgent that the intestinal infestation by *Endameba histolytica* and *Balantidium coli* be recognized early and before the infesting parasites have had opportunity to pass from the alimentary tract. It is doubtful whether pathogenic protozoa are able to affix themselves and penetrate normal uninjured intestinal lining. However, if the intestinal mucosa has suffered vascular engorgement, abrasion, superficial or deep ulceration, or if its defense has been lowered by enteric or systemic infectious disease, vegetative forms of *Endameba histolytica* or of *Balantidium coli* may rapidly produce local or extensive intestinal lesions.

It is evident, then, that all chronic or acute intestinal disturbances should be looked at, diagnostically, not only from the standpoint of the common types of so-called colitis but from the point of view of protozoic infestation initiating or aggravating the digestive anomaly.

It is possible by means of the roentgen ray (colon enemas) to indicate graphically the difference between early colon infestation by pathogenic protozoa and the consequences of failure to recognize the organisms prior to the time when they had advanced from the lumen of the intestine (Vallarino,[6] Smithies [3]).

The effects, local and systemic, of so-called nonpathogenic protozoa (*Giardia, Trichomonas* and *Chilomastix*) are still undetermined. A few years ago it was thought that these flagellates were incapable of giving rise to bowel dysfunction or systemic disturbances. However, evidence is being brought forward, gradually, which appears to indicate that while these flagellates are, in the main, lumen-dwellers, they are capable of acting as mechanical or toxic irritants in intestines whose walls already are the sites of ulcerative lesions. Freund [7] and others have shown that flagellates may thrive luxuriantly in the necrotic edges and bases of colon ulcers. It would seem that in such situations their metabolism of necrotic or partly devitalized protein may prevent healing of the lesions or give rise to systemic consequences.

As viable, proliferating, mechanical irritants, when flagellates are located in chronic colon ulcers, their effect with respect to influencing malignant transition in susceptible hosts cannot be disregarded. I have placed on record [3] seven instances in which flagellate infestation, occurring in ulcerated colons over periods ranging from three to eleven years, was ultimately accompanied by the appearance of colon carcinomas. Consequently, it would seem that massive infestations of the small and large bowels by flagellates cannot be regarded as innocuous with respect either to primary effects or to the late consequences of their residence.

Acute bowel disturbances, generally associated with intermittent diarrhea or looseness of the stools, certainly is observed in the temperate zone residents who harbor flagellates. Whether or not commensal bacillary infection is responsible for the diarrhea does not seem proved. Certainly, a luxuriant bacillary growth nearly always accompanies the diarrhea associated with flagellates, but measures directed only toward lessening the bacillary incidence, leaving the flagellates present, are not accompanied by checking of the diarrhea or the systemic consequences. On the other hand, therapeusis directed only toward destroying flagellates stops diarrhea and restores comfort to patients, even though the bacillary infection is not influenced.

EXTRA-ENTERIC EFFECTS OF INTESTINAL PROTOZOIASIS

Investigations carried on within the past decade have shown that systemic injury of a severe nature may follow or accompany protozoic infestation primarily present in the alimentary tract. This phase of protozoic parasitosis warrants further research and careful consideration clinically. Our knowledge has been summarized adequately, with respect to endamebiasis, by Kofoid,[6] and commented on by Castellani. The organism has been recovered from liver abscess (Kartulis, 1887), lung abscess (Simon, 1890), brain abscess (Kartulis, 1904), the urinary bladder (Juergens, 1892), the testis and epididymis (Warthin, 1922), the fallopian tube (Menebrier, 1910), spleen abscess—infarct?—(Maxwell, 1909), malar abscess (Flexner, 1892), the bone marrow (Kofoid and Swezy, 1922) and skin ulcers (Engmann and Heithans, 1921). In May, 1926, I [8] reported encysted and viable *Endameba histolytica* in the bile of three gallbladders removed at operation. The significance of endamebiasis and protozoiasis, generally, in certain forms of arthritis has been discussed by Barrow.[9] However, proof of its definite etiologic relationship as yet seems lacking.

Extensive parenteral tissue invasion by *Balantidium coli* has not been reported. Perhaps the size of this protozoan, as well as the limitations imposed to free travel by its ciliated locomotary equipment, are factors detrimental to extension through capillary blood or lymph beds.

Since *Endameba histolytica* is the most frequently encountered pathogenic intestinal protozoan, and because of its ready invasion of extra-enteric structures, it is not necessary to emphasize that any treatment of alimentary tract endamebiasis is incomplete which is directed only to organisms in the lumen or the walls of the intestine; cysts and vegetative endameba may remain viable and destructive for long periods (e. g., in the liver, lung and spleen) even though the infestation in the bowel and its contents has been controlled. One cannot too strongly stress this aspect of therapeusis in a known parasite host.

The flagellates *Giardia, Trichomonas* and *Chilomastix* are not tissue-invaders, and hence would seem to be incapable of attacking structures far distant from the bowel. However, as I [10] have shown, these protozoa may have an unsuspectedly wide range of distribution. I have recovered them from the small intestine, the duodenum and the stomach. Recently, I [8] reported

6. Proceedings of the International Conference on Health Problems in Tropical America, 1924, United Fruit Company Publication, Boston.
7. Freund, Hugo: Trichomonas Hominis Intestinalis, Arch. Int. Med. **1**: 28 (Jan.) 1908.
8. Smithies, Frank: Read before the American Society of Tropical Medicine, May, 1926; to be published.
9. Barrow, J. V.: Am. J. Trop. Med. **4**: 23 (Jan.) 1924.
10. Smithies, Frank: M. Clin. Chicago **2**: 1190 (May) 1917; Am. J. M. Sc. **156**: 173 (Aug.) 1918; Am. J. Trop. Med. (footnote 3).

twenty-nine instances in which these flagellates were recovered from the biliary tract during nonsurgical drainage by duodenal intubation, and in seven instances operation revealed encysted or vegetative stages of the organisms in the gallbladder contents. How productive of pathologic changes or of symptoms the organisms were I am not able to estimate.

CONSTITUTIONAL EFFECTS

The scope of this report does not admit detailed discussion of systemic injury, proved or suspected, which may result from intestinal protozoiasis. A rich literature on this phase is available to those who are interested (James and Deeks, Garin and Lepine, Runyon and Herrick, Vallarino, Herbert Clark, Hegner et al.[6]). In previous communications I have summarized both clinical and laboratory data from my own experiences. I have emphasized the necessity for an appreciation of the generalized organic, functional and secretory abnormalities, if one is to restore protozoan-infested patients to health. Occasions arise in which ridding the bowel of organisms actually is a minor problem when considered as a curative measure. Frequently enough, this conception of proper therapeutic attack is not recognized.

CLINICAL MANAGEMENT

It should not be necessary to direct attention to the fact that success cannot be hoped for in any treatment of intestinal protozoiasis if the infesting parasite or parasites are not accurately recognized. However, my experience indicates that too often the isolation of one protozoan is considered sufficient evidence on which to begin treatment, whereas careful study of the properly prepared stools, by many smears examined on the hot stage of a microscope and over long periods, reveals multiple infestations. Not rarely, I have seen intestinal treatment for flagellosis carried on without especial benefit to the patient whose stools, on careful and repeated study, revealed *Endameba histolytica* or *Balantidium coli*. The reverse is also true. Encysted forms of *Endameba histolytica* are of greater value in differentiating this protozoan from so-called nonpathogenic endameba than are vegetative forms. However, one familiar with endameba can usually accurately place the parasite at its vegetative stage.

It is dangerous to make a diagnosis of *Trichomonas* and *Chilomastix* at the encysted stage. *Balantidium* cysts are readily recognized. It would seem wise to have viable *Giardia* for accurate diagnosis. Certainly, no opinion regarding the complete list of protozoa which a stool may contain should be made unless the patient is under observation for several days on a fluid diet, and numerous properly collected and preserved stools are examined daily, and under high power. In instances in which endamebiasis or balantidiosis are suspected but proof is difficult, I have found of value the suggestion of James that a roughage diet, administered for several days, slightly traumatizes the bowel wall and dislodges sufficient organisms to admit of their demonstration.

Ambulatory treatment of intestinal protozoiasis is not nearly so successful as when patients are hospitalized. Not only is it difficult for patients to carry out orders at their homes, but it is almost impossible to make daily microscopic check of the stools without hospital laboratory facilities. Intelligent treatment rests entirely on the appreciation of what is happening, as therapeutic measures are exhibited.

As Vallarino[6] and I[3] have emphasized, unless the patient has recently experienced prostrating hemorrhage or physical examination of the abdomen indicates potential or actual perforation of ulcer, no regimen of treatment for protozoic enterocolitis can be planned accurately without study of colon-enema roentgenograms. Certainly, an accurate prognosis of the possible result cannot be made without careful scrutiny of the gross injury present in the colon walls, either due primarily to the parasite, or as furnishing hospitable resting places for parasite lodgment, growth and tissue invasion. One cannot too strongly condemn the attempt at determining species of protozoic infestation or estimating the consequences of such by mere proctoscopy and the study of bits of mucus obtained from the mucosa of the rectum and the sigmoid.

My therapeutic experience is confined largely to chronic intestinal protozoiasis and the management of acute flare-ups, with or without dysentery. Except in special instances, the management is as follows:

TREATMENT

1. *Preliminary Preparation.*—Generally the patient is put to bed and abdominal relaxation secured by large, hot compresses, saturated with boric acid and alcohol solution. Except when acute bowel lesions exist or are suspected, the alimentary tract is cleansed by morning and evening doses of 4 ounces (120 cc.) of magnesium citrate, or a saturated solution of sodium phosphate. Hegner[6] has called attention to the value, therapeutically, of a high protein diet in diminishing intestinal parasites or rendering them less resistant. Consequently, for several years, I have, as a preliminary measure, administered for several days a warm fluid diet (skimmed milk, meat juice soups, clam and oyster broth, albumin water), before attacking the protozoa by medicines. During this preparatory stage of treatment, full doses of tincture of belladonna are administered with the object of relaxing spasms and opening up diverticulum mouths or ulcers, thus permitting thorough cleansing of mucosal surfaces and the free distribution of medicinal agents. This simple maneuver is of great importance. When there is much pain from very active or extensive ulceration, the bowel is further quieted by opium, given by mouth or into the rectum by suppository.

2. *Measures to Free the Intestine of Protozoa.*—The aim of any specific therapy is, first, to destroy and eliminate protozoa infesting the intestinal contents and lodged on mucous membranes, and, secondly, to destroy the organisms which have already passed from the lumen of the alimentary tract into the wall of the intestine, or have been distributed systemically. Remedies effective against *Endameba histolytica* have little ability to destroy flagellates and ciliates. Consequently, the treatment of endamebiasis differs radically from that of balantidiosis or flagellosis.

(*a*) *Endamebiasis.*—In spite of the encouraging reports of James and Deeks[6] in reference to the treatment of this condition by frequent and massive doses of bismuth subnitrate and of emetine, I am still of the opinion that quite as effective and perhaps more permanent results follow the intelligent employment of ipecac or its alkaloids. As early as 1903, George Dock directed attention to procedures whereby thorough saturation of the bowel with powdered ipecac rapidly destroyed endamebas. Later, Sidney Simon supported Dock's opinion. Our experience has been similar. Powdered ipecac can be given in from 60 to 240 grain

(4 to 16 Gm.) doses daily, if the medicine is exhibited in phenyl salicylate (pin-hole free) coated pills or in properly sealed keratin capsules. If the patient stays in bed, lies on his right side, has fasted for an hour before the ipecac is given and the pills are swallowed without cracking, from 20 to 30 grains (1.3 to 2 Gm.) of ipecac may be given at two-hour intervals. It is well to begin with a major dose and to lessen the daily intake by 30 grains (2 Gm.) thereafter. A half hour after the ipecac is administered, 30 drops of camphorated tincture of opium in a small quantity of sugar water may be given. During the period over which the treatment is being administered, a diet such as that in the accompanying tabulation is given.

In patients who tolerate the duodenal tube well, the tube may be administered at night, and the following morning, ipecac in the form of tincture or wine and in a dosage of from 2 drachms to 1 ounce (7.5 to 30 cc.), as suggested by Harvey Beck,[11] given several times daily. In 1918, I [12] suggested the rectal administration of from 1 to 3 ounces (30 to 90 cc.) of wine of ipecac when patients were not able to take ipecac by mouth or through the duodenal tube. I still find it of value in selected instances.

Diet Used in Endamebiasis

7: 30 a. m.	One cup parched milk.* One cup strong black tea or cocoa not very sweet. Two egg yolks—hard boiled, then crushed and seasoned. Three zwieback or 2 shredded wheat biscuits.
10: 00 a. m.	Three arrowroot biscuits. One cup strong black tea with sugar.
12 noon	One cup beef broth. Four ounces rare beef or well done lamb or chopped beef (all meats to be chopped fine and well chewed). One baked potato (interior mealy), or 3 ounces mashed potato. Two pieces zwieback. Three to 4 ounces tapioca, sago, chocolate pudding, blanc mange, firm custard, chocolate cake, cottage cheese or baked apple.
3: 00 p. m.	One glass parched milk.
6: 30 p. m.	One pint heated parched milk. One cup strong black tea or cocoa (not too sweet). Two hard boiled egg yolks, crushed and seasoned. Two pieces zwieback with butter; or 1 shredded wheat biscuit or 4 arrowroot biscuits.
9: 00 p. m.	One glass parched milk or cocoa.

* Parched milk is milk which has been heated to simmering and kept exactly at that temperature for twenty minutes, then cooled and taken as directed. A day's supply may be prepared each morning.

Until the alimentary tract is thoroughly saturated with the ipecac preparation, and the carefully examined stools show that no viable or encysted organisms are present, I do not make any attempt to attack parasites situated parenterally. If one carries out this procedure, the discomfort and sometimes shock attendant on the exhibition of such amebacides as emetine are largely avoided. When emetine is begun, I prefer to use it in increasing doses. One-third grain (21 mg.) of emetine hydrochloride, intramuscularly, is given three times a day for two days, and after that each dose is increased by one third until, provided there are no neuritic or depressant effects, the patient is receiving as high as 3 grains (0.2 Gm.) three times daily. As a powerful adjunct to the use of emetine, I have regularly administered some form of arsenic intravenously. There are many preparations, but my choice is neoarsphenamine; 0.15 Gm. is given intravenously every other day.

I have had scant experience with the hypodermic or oral administration of the newer arsenic compounds, such as acetarsone, suggested by Garin and by Lepine and Brown.[6] It is quite likely that these remedies are useful when properly employed. The same might also be said for chaparro amargoso and chiniofon. However, those who are in closer contact with the disease and have to deal with large groups of patients, frequently not hospitalized, lay stress on simpler remedies which can be given without danger, locally or constitutionally.

Following practically every series of administering ipecac, in some form, I exhibit a course of thymol as a routine. The patient is kept on a fat-free diet for three days, and then toward the middle of the fourth day 30 grains (2 Gm.) of thymol in honey is given by mouth at hour intervals, for two doses. Strong black coffee is next given hourly for four hours, and at the fifth hour the patient receives 2 ounces (60 cc.) of a saturated solution of magnesium sulphate. Massive doses of thymol, given after a fat-free diet, rarely produce toxic symptoms, provided the patient is kept quiet and receives sufficient hot fluid, particularly coffee.

Much has been said about the efficacy of colon irrigations in acute or chronic amebiasis. The vegetative forms of a parasite are readily destroyed by water, particularly if the water is at a temperature of between 110 and 120 F., as suggested by de Rivas.[13] This investigator has determined the thermal death point of the endameba, and has applied the principle of heat above the thermal death point in the clinical eradication of the parasite, with encouraging results. In my experience, such colon irrigations are of service. On account of the frequent coincident presence of flagellates and dysenteriform bacteria, I have employed for nearly two years copious, slowly given and long retained colon lavages with 1 : 1,000 solution of mercurochrome-220 soluble at a temperature of 110 F. The procedure has seemed to be a very successful adjunct to other remedies. While I do not have autopsy material to present, it has seemed to me that the mercurochrome solutions might be of some value in eradicating vegetative forms of the endameba lying fairly well protected in edges of ulcers or even when actually in the deeper mucosal layers. These mercurochrome injections have an advantage over injections of tannic acid, silver nitrate and other astringents in that they are not painful and not toxic. They can be given over long periods without discomfort or injury, and if the solutions are hot, the end-results appear to be worth while.

By the end of ten days' treatment, if the stools are controlled by daily study, vegetative forms of endameba have disappeared. However, cysts may be present, as they are very resistant when in the alimentary tract or in the wall of the intestine. At this point of the treatment it is advisable to direct measures toward relief of the primary or secondary colon lesion, giving the cysts opportunity to mature, at which time they can be attacked in the fashion described. In the management of gross disease of the colon, rather than as a prime therapeutic agent of amebacidal type, massive doses of bismuth subnitrate now have their chief use. Probably, should bismuth subnitrate be used initially as an amebacide, its main service would be to decrease the volume of symbiotic bacteria and mechanically cover raw or ulcerated surfaces. By these means, new crops of vegetative endameba are prevented and those at the vegetative stage so harmed that they do not encyst but gradually die. With a bland vitamin-balanced diet, it is my practice to give, in water suspension, 40 grains (2.6 Gm.) of bismuth subnitrate hourly from 8 a. m.

11. Beck, H. G.: Proc. Am. Gastro-Enterol. A., 1920.
12. Smithies (footnote 10, second reference).
13. De Rivas, Damasco: Am. J. Trop. Med. **6**: 230, 1926.

to 10 p. m. If this proves too constipating, every fourth dose is administered in ½ ounce (15 cc.) of liquid petrolatum. When the administration of bismuth is begun, emetine, ipecac and colon irrigations are of course abandoned. However, I continue the intravenous exhibition of arsenic compounds as frequently as every fifth day, provided there are no complications. Stool examinations during bismuth administration permit the recognition of vegetative protozoa only with difficulty; cysts are rarely recognized. To facilitate microscopic stool studies during this period, the fresh stool should be received into three times its volume of warm physiologic sodium chloride solution, centrifugalized, the bismuth precipitated, the supernatant layers decanted and the search for protozoa made in the usual way. Staining with iodine or hematoxylin facilitates the search. It is my opinion that, as a result of the presence of bismuth crystals on the slide, many patients are pronounced ameba-free long before vegetative forms or cysts have disappeared. In such patients recurrences are to be expected.

Even when the patient is discharged from the hospital parasite-free and with the colon functioning adequately, he should remain under observation. My practice is to examine stools at not longer than ten-day intervals for from three to six months and, at the first sign of vegetative forms or the persistent appearance of cysts, to carry out a modified amebacidal regimen. When, by means of biliary tract drainage through the duodenum, cysts or vegetative organisms have been demonstrated, I perform drainage at from one to three week intervals. In a previous paper [8] I reported on this method of dealing with carriers. If nonsurgical drainage does not free the biliary tract of parasites, I advise cholecystectomy; but even cholecystectomy may not prove curative if protozoa have passed into the hepatic ducts. Vegetative and encysted endamebas have been observed in the vermiform appendix. This fact must not be forgotten, because, like the gallbladder and bile ducts, the appendix may prove a focus of infestation from which recurrences of the colon infestation occur. Certainly, when persistent recurrences cannot be traced to the biliary tract, and in the presence of appendix-like dyspepsia, appendicectomy should be performed. It is quite likely that the chief advantages of appendicostomy in chronic amebiasis have lain in the actual destruction of infestation foci at the time of the appendicostomy, and not especially in subsequent irrigations by medicated solutions.

Even when patients have become free from endamebas, they commonly need systemic treatment. Defective gastric and pancreatic output has to be combated; anemia (often pernicious-like) requires food rich in vitamins and arsenic and iron, and bowel ulcers or strictures (primary or secondarily due to the protozoa) demand local and dietetic care. In some instances the healing of ulcers or ulcerated bowel diverticula results in dense fibrosis with stricture, malposition or even actual obstruction. In such mechanical anomalies, surgical measures may be required.

(*b*) Flagellate Protozoa: When *Giardia, Trichomonas* and *Cercomonas* are the infesting organisms, the general preliminary management with respect to freeing the alimentary tract of parasites is similar to that already outlined in amebiasis; that is, provided flagellosis only is the problem. During treatment there should be constant observations of the stools lest a coincident amebiasis or balantidiosis escape notice. Since 1906 I have found that mild mercurous chloride in rather large doses, in repeated series, is the most useful drug for combating flagellosis. In its exhibition, however, interval administration is necessary in order that encystment may be prevented and that new crops of flagellates may not appear. Failures with mild mercurous chloride are commonly due to lack of persistence in the administration of the remedy. Not rarely, treatment must extend over several months, particularly in the spring and fall, at which seasons the infestation appears to be most active and prevalent.

After preliminary preparation by protein-rich, very soft or fluid food and free saline purging, from 5 to 15 grains (0.3 to 1 Gm.) each of mild mercurous chloride and sodium bicarbonate are given late at night and followed next morning by 4 ounces (120 cc.) of saturated solution of magnesium sulphate. After taking the saline solution, the patient is directed to lie promptly on the right side, with the knees drawn up toward the chin, and to remain thus for half an hour. This position facilitates rapid discharge of the saline solution from the stomach and may be an aid to biliary tract emptying. Diet is kept fluid but adequate, and the progress of treatment is checked entirely by stool studies. Even if the first course of this medication rids the intestine of flagellates, at five-day intervals for from two to six weeks the therapeusis is continued in order that new trophozoites may be caught. As an adjunct to the direct medical attack, if biliary tract drainage by duodenal tube has revealed protozoa, frequent duodenal intubation is carried forward, say, at weekly intervals. For those who have had actual experience in this procedure, there is no necessity for me to cite here previous contributions on the subject. If the material from duodenal drainage remains constantly positive for protozoa, I advise cholecystectomy or cholecystotomy, as occasion demands. It is useless to attempt relief of intestinal protozoiasis if one leaves behind foci of reinfestation in the gallbladder and bile passages. Perhaps many of the failures in treatment are due to neglect of this precaution.

(*c*) Ciliates: The cilia represented by balantidiosis are best treated by spaced doses of mild mercurous chloride and sodium bicarbonate, by massive doses of thymol given orally and by arsenic (e. g., neoarsphenamine) given intravenously. The condition is difficult to manage when parenteral spread of the parasite has occurred and extensive ulcerations of the intestine are present. Colon lavages with 1:5,000 solution of mercurochrome have proved useful and less inconvenient to the patient than any other irrigation formulas. Here, again, treatment over a long period is requisite. One must be constantly on guard lest acute enteric crises arise, and should recognize the surgical problems which may result from scar tissue development during or following the healing of bowel lesions. Systemic management of the consequences of ulcerative colitis associated with balantidiosis is quite as essential as it is in amebiasis. Finally, hosts, even after having been shown to be protozoa-free, should be studied for a minimum of a year in order to anticipate relapses.

SOCIAL IMPLICATIONS

The community aspect of intestinal protozoiasis must not be neglected. Certainly, in all states, as now in some, endamebiasis and balantidiosis should be reportable diseases. In fact, I should advise that all cases of protozoiasis should be made reportable, particularly since mixed infestations are so common. Neglect to find endamebas in a frank, often considered harmless, instance of flagellosis may be followed by free-

scattering of endameba cysts with serious results. Particularly should caution be exercised when protozoiasis appears in rural communities or at summer resorts. I have seen two communities attacked by typhoid-like (so-called atypical typhoid) diarrhea and prostration, when protoziasis was directly traceable to water and fly borne infestation from defective latrines, these having been contaminated by carriers. Stools containing protozoa should be disposed of as carefully as are typhoid stools. Cold water disinfects them satisfactorily, but boiling water better. A 1:10,000 hot mercurochrome solution should be employed in institutions.

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CHEMICAL TESTS OF THE BLOOD

INDICATIONS AND INTERPRETATION *

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The development in recent years of modern microchemical methods for the analysis of blood has been of enormous value, and such methods are now firmly installed as part of the practice of medicine. However, the use of these methods has at times been somewhat of a liability as well as an asset, since their undiscriminating employment by the profession at large results in a great deal of loss in time and money by the laboratory and by the patient. As a result of the work of the last few years, the indications for the various blood tests in common use have been just as much systematized as the indications for examination by the roentgen ray, the esophagoscope or any similar diagnostic procedure. Unfortunately, while these indications and limitations are well known to those working in the field, they have not been generally diffused among the members of the medical profession and hence the average physician is at a loss to know just when to request various tests on the blood and how to interpret the results that are reported to him from the laboratory.

The question often arises as to just how active a part the general practitioner should take in the application of the results of our knowledge of the chemical reactions of the blood to his patients. My own feeling is that he should be thoroughly conversant with the indications for ordering the tests in various diseases and with the interpretation of the results which are reported from the laboratory as applied to his particular patient but should not take any part whatever in the actual carrying out of the procedures. The average physician in general practice will not see more than ten or a dozen cases a year in which a chemical analysis of the blood will be of any value to him in diagnosis or treatment. From an economic standpoint alone it would be unwise for him to invest heavily in glassware and reagents for the performance of these occasional tests which are frequently very time consuming. Furthermore, to do such tests properly demands trained chemical control, as the various standards and solutions in use gradually deteriorate at different rates and must be constantly checked as to their accuracy. Various attempts have been made to popularize modified methods for the general practitioner by using blood obtained from the finger or ear or by making various short cuts in standard methods which are supposed to be adapted to office use. While the chemists who originate these methods may be able to secure check results in their own laboratories, I do not know of any method which I would trust to give consistently accurate results in the hands of some one with much less chemical experience than the originator. Gilbert and Bock [1] have shown in a study of finger blood methods for the determination of sugar that the errors inherent in the small pipets used are alone considerable. Furthermore, there is now no need for the physician in most places to attempt to do his own laboratory work of this type since nearly every one now has access to an adequate laboratory, and bloods can now be preserved so that they may be received through the mail in condition suitable for analysis. The physician should locate a reliable laboratory in his neighborhood and have a detailed understanding with the director as to the exact manner in which blood specimens should be collected for the various chemical tests.

The commonest mistake in ordering chemical tests is to order a "routine blood chemistry." To the laboratory this is a term which is absolutely devoid of meaning, and no two laboratories agree on what is included in such a phrase. Such a term really means that the clinician does not know anything of the indications for chemical analysis, and in a difficult case begins snatching at diagnostic straws. Such an order is a reflection on the diagnostic ability of the physician who gives it and does not come from those who are really acquainted with the practice of medicine. Cystoscopy and pyelography are not done on every patient with minor urinary complaints; the rhinologist does not use the nasopharyngoscope on every patient with a cold in the head; the roentgen-ray man does not take every possible type of plate on every patient who comes into the hospital; nor is every patient with indigestion examined with the esophagoscope and the proctoscope. When that sad day comes in the practice of medicine when all these things are "routine," there will be plenty of time to consider the use of "routine blood chemistries."

The cost of this tremendous amount of unnecessary work must be borne by either the hospital or the patient. Many physicians think that a chemical test of the blood costs only a few cents. In our laboratory we find that the average cost for each test is $1.20, and we do many more tests a year than the average hospital. If a larger group of analyses were done, the average cost would be smaller, and for a smaller number it would be higher. In a number of hospitals which I have visited, I have seen records of hundreds of unnecessary tests in the course of a year because of this insistence on routine blood analyses. In all fairness to the laboratories, I must say that it is not the fault of the laboratory directors but of the clinicians, and that the directors themselves realize the enormous wastage. Unfortunately, many of them are not physicians and therefore usually get the worst of any argument on the subject with a clinician. As an example of such practice, which is certainly not extreme, Feinblatt [2] reports 2,000 routine analyses which were made on all the patients admitted to the medical service of his hospital. Of these 2,000 patients, eighty-one showed a high blood sugar, and of these, thirty-four were known to have diabetes. Therefore, in order to locate forty-seven nondiabetic persons with hyperglycemia, more than 1,900

* From the University of Maryland School of Medicine.

1. Gilbert, M., and Bock, J. C.: On the Determination of Sugar in Small Amounts of Blood, J. Biol. Chem. **62**: 361-369 (Dec.) 1924.
2. Feinblatt, H. M.: Hyperglycemia—Based Upon a Study of Two Thousand Blood Chemical Analyses, J. Lab. & Clin. Med. **8**: 200 (Dec.) 1922; **8**: 500 (May) 1923.

normal blood sugar determinations were done, probably at a cost of several hundred dollars to the hospital. Aside from its value as a piece of research work, I do not think that any such expenditure is justified by a hospital for the routine care of its patients. Some hospitals even order routine nonprotein nitrogen, sugar, uric acid, creatinine and cholesterol tests for all their patients or in all of certain services.

The remedy for this unsatisfactory condition is to order only specific blood chemical analyses when they are indicated, and the indications for the use of such tests are now just as definite as for cystoscopy or roentgenoscopy or any other similar procedure. As I shall show presently, the type of case in which abnormal conditions will occur in the blood can be predicted with a high degree of accuracy from the clinical picture, and it is just as much a duty of the clinician to make this preliminary prediction as it is for him to make a preliminary diagnosis of pulmonary tuberculosis from the history and physical signs before ordering a roentgenogram.

In discussing the indications for the routine tests which are in common use, I am considering only the application to the ordinary clinical patient and am disregarding entirely analyses in the course of research problems or problems of clinical investigation. I am also fully conscious of the fact that occasional exceptions will occur to the rules which I so dogmatically lay down; but I believe that it is important to view the forest rather than the individual trees at times, and the practice of medicine is based on rule rather than on exception. In approaching a concrete case, the medical mind usually is dominated by various mental slogans applicable to different types of diseases. Therefore I have formulated the main rules for the indications for blood tests into a series of ten clinical aphorisms and discuss afterward some of the limitations and the interpretation of each test. Table 1 shows the normal values for the various constituents of the blood which are determined in routine medical work.

TABLE 1.—*Normal Values for Constituents of Blood*

Substance	Range, Mg. per 100 Cc.
Nonprotein nitrogen	25 to 35
Urea nitrogen	10 to 15
Urea (urea N × 2.142)	20 to 32
Uric acid	2 to 4.5
Creatine	3 to 7
Creatinine	1 to 2.5
Amino-acid nitrogen	5.5 to 8.0
Dextrose (new Benedict or Folin)	50 to 120
Carbon dioxide combining power	50 to 70 (per cent by volume)
Chlorides (plasma as sodium chloride)	562 to 625
Chlorides (plasma as chloride ion)	357 to 381
Chlorides (whole blood as sodium chloride)	450 to 500
Chlorides (whole blood as "chlorine"; Cl^-)	275 to 325
Inorganic phosphorus	2 to 4
Serum bilirubin	0.1 to 2
Calcium, serum	9 to 11

GENERAL CONSIDERATIONS

When the constituents of the blood are reported in terms of milligrams per hundred cubic centimeters, as is usually the case, it is frequently difficult to visualize their significance. Luden [3] has called attention to the importance of visualizing them in terms of the total amount in the entire circulating blood, and this process gives a much better perspective of the changes that may occur in health and disease.

The total blood volume in an average adult is about 5 liters—an amount that will half fill an ordinary household bucket. In this half bucket of blood are dissolved a teaspoonful of sugar, a tablespoonful of sodium chloride and 12 Gm., or about a tablespoonful, of sodium bicarbonate. The entire circulating blood contains 30 grains (2 Gm.) of nonprotein nitrogen, or the equivalent in weight of six "five grain" (0.3 Gm.) tablets. From 1 to 3 grains (0.065 to 0.2 Gm.) of uric acid and creatinine are present, and about one one-hundredth grain (0.6 mg.) of iodine. From 1 teaspoonful to 1 tablespoonful of fat are present, and there is also about a teaspoonful of cholesterol, or the amount that could be extracted from two dozen egg yolks. These figures are for 5 liters of blood; and when it is considered that all of them are determined chemically on 10 cc. samples, some idea of the extremely small quantities with which the analyst is working may be obtained. It is for this reason that practically none of the blood tests can be done with an accuracy of greater than 5 per cent, although this error with such a small quantity of material usually makes little difference.

Such facts are also of value in the interpretation of results. Thus, a blood sugar report of 200 mg. per hundred cubic centimeters means only that there are 2 teaspoonfuls of dextrose in the entire circulating blood instead of 1, and obviously dextrose is not such a toxic substance that an extra teaspoonful to the half bucket is going to kill any individual. Indeed, in certain conditions after intravenous injections of dextrose, much higher concentrations are reached with distinct benefit to the patient.

After the removal of the various proteins of the blood, including hemoglobin by precipitation, a certain number of nitrogenous constituents are left behind. The sum total of these constitute the nonprotein nitrogen of the blood. The various fractions that make up this group and their normal relationships are shown in table 1. The substances of known chemical composition which have been identified are urea, uric acid, creatinine and the amino-acids, with perhaps some others. Ammonia, if it is present at all, is in such small quantities that it is not practical to measure it for clinical purposes. Small quantities of creatine are also present, principally in the cells, but this substance has no clinical importance. From 5 to 15 mg. per hundred cubic centimeters of the nonprotein nitrogen of normal blood consists of compounds of unknown composition. Most of these are in the cells rather than in the plasma.

About half the nonprotein nitrogen consists of urea nitrogen, and the two fractions rise in the blood at approximately the same rate thus paralleling each other. Clinically, the determination of both the total nonprotein nitrogen and the urea nitrogen are used in the estimation of renal function. Theoretically, the total nonprotein nitrogen is the most desirable, since it includes all of the various compounds which may be retained by the kidney in uremia. Practically, however, the determination of urea is simpler and more rapid, and hence it is in more general use. Whichever test is used in any institution, therefore, depends largely on the laboratory facilities available. The clinician should recognize that the two tests have the same significance and it is therefore unnecessary to order the two for the same patient except for research purposes. The thing to do is to remember that the normal figures will be somewhat lower when the urea nitrogen is used than when the nonprotein nitrogen is measured, and this

3. Luden, G.: The Importance of Visualizing Established Scientific Data with Reference to the Size of the Blood Cells and Their Chemical Supplies in the Circulating Blood, Endocrinology **5**: 715-728 (Nov.) 1921.

should be considered in interpretation. The parallelism is shown in table 2. Some laboratories report the result of the urea measurement as molecular urea and others as urea nitrogen. These are not two separate tests but simply two methods of calculation. Since the first value is about twice the second, the practitioner should always keep in mind the method of reporting that is used by his particular laboratory.

CLINICAL APHORISMS

1. *Never ask for both nonprotein nitrogen and urea determinations in the same patient.*

The determination of the nonprotein nitrogen and urea concentrations is used primarily by the clinician as a test of renal function. The relationship of this test to other tests of renal function must therefore always be kept in mind. As the renal tissue is progressively destroyed in nephritis, the earliest disturbance of renal function consists of an inability of the kidney to concentrate the solid constituents of the urine. This weakness is best brought out by the concentration test of Volhard or by such tests as those of Addis and of Maclean,[4] which consist in giving the patient a considerable dose of urea, the added strain thus bringing out the inability of the kidney to concentrate. Unfortunately, none of the tests of renal function are able to reveal this impairment until there has been considerable destruction of tissue, owing to the large factor of safety of kidney substance. With a failing power of concentration, the kidney may continue for a long time in a compensated stage, since only the concentration of urine (grams of solids per hundred cubic centimeters of urine) is affected. The work of the kidney can be carried on by putting out a larger volume of urine or by working longer hours, so that the nitrogen arising from the three meals during the day is not put out promptly but is distributed more or less uniformly throughout the twenty-four hours, thus resulting in the polyuria and nycturia of chronic nephritis. There are no systemic changes secondary to this condition, and the patient may enjoy fairly good health for long periods of time.

2. *Except in emergency, never ask for a nonprotein nitrogen determination when the excretion of phenolsulphonphthalein is normal. Determine the output of phenolsulphonphthalein first.*

If the power of concentration is still further reduced, difficulty is experienced in excreting such foreign solids as phenolsulphonphthalein, and at this stage less and less dye appears in the urine during the period of the phenolsulphonphthalein test. A still greater reduction of the power of concentration results in an impairment of excretion of the nitrogenous substances from the blood; hence the nitrogen content of the urine falls and the nitrogen content of the blood and tissues rises. Experimentally, about three fourths of the kidney substance can be removed before this condition occurs. This is the decompensated stage, or true uremia. The same result may be brought about in still another fashion. The compensated kidney with impaired function depends to a great extent for its compensation on an adequate supply of water, so that it can excrete larger quantities of a more dilute urine and thus accomplish its day's work. If for any reason this supply of water suddenly becomes diminished, the kidney becomes decompensated and the nitrogen level in the blood rises. Clinically, this is seen in certain cases which might be called uremia from dehydration.

The interpretation of an elevated nonprotein nitrogen in the blood, however, is not always as simple. Maclean has pointed out cases in which the power of concentration and the excretion of nitrogen are fairly good, yet in which the nonprotein nitrogen of the blood is elevated. Apparently these persons need to have a certain level of "nitrogen pressure" to excrete a normal quantity of nitrogen in the urine. Peters and Bulger [5] have called attention to the fact that the azotemia may be simply an expression of increased tissue destruction which sometimes occurs in nephritis as well as in other conditions, and this excess amount of nitrogen is only later adequately excreted in the urine. In a similar manner, Boothby and his co-workers [6] have shown that a rise in the nonprotein nitrogen in the blood occurs in cases of myxedema under treatment with thyroxin.

TABLE 2.—*Relationship Between Nonprotein Nitrogen and Urea Nitrogen Tests* *

Urea Nitrogen, Mg. per 100 Cc.	Nonprotein Nitrogen 21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-160	161-170	171-180	181-190	191-200	201-210	211-220	221-230	Total Number of Cases
0- 10	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	3
11- 20	18	264	18	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	300
21- 30	...	2	17	12	1	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	32
31- 40	...	...	..	...	2	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	2
41- 50	...	..	...	...	...	1	2	1	...	1	...	...	...	...	...	..	..	..	..	..	..	5
51- 60	...	...	...	...	...	...	...	1	...	...	1	...	1	...	...	..	..	..	..	..	..	3
61- 70	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	..	..	..	..	..	..	1
71- 80	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	..	..	..	..	..	..	2
81- 90	...	...	...	...	...	...	...	...	1	...	2	...	...	...	...	..	..	..	..	..	..	3
91-100	...	...	..	..	...	...	...	...	...	...	...	1	...	...	...	..	..	..	..	..	..	1
101-110	...	...	..	..	...	...	...	...	...	...	...	...	...	...	1	..	..	..	..	..	..	1
111-120	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	1	..	1
121-130	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	1	..	..	..	1
131-140	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	
141-150	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	
151-160	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	
161-170	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	..	..	..	..	..	
171-180	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	..	..	..	..	..	1	1
Total cases	21	266	35	12	3	1	2	2	2	3	3	1	1	...	1	..	..	1	..	1	1	356

* When the frequency of occurrence of two factors is arranged in this form, a high correlation is shown by their tendency to arrange themselves in a straight line. This constant relationship of the urea nitrogen and nonprotein nitrogen is thus well shown in this table, based on 356 cases.

4. Maclean, H.: Modern Methods in the Diagnosis and Treatment of Renal Disease, Philadelphia, Lea & Febiger, 1921.

5. Peters, J. P., and Bulger, H. A.: The Relation of Albuminuria to Protein Requirement in Nephritis, Arch. Int. Med. **37**: 153-185 (Feb.) 1926.

6. Boothby, W.; Sandiford, I.; Sandiford, K., and Slosse, J.: The Effect of Thyroxin on the Respiratory and Nitrogenous Metabolism of Normal and Myxedematous Subjects: I. A Method of Studying the Reserve or Deposit Protein with a Preliminary Report of Results Obtained, Ergebn. d. Physiol. **24**: 728-756, 1925.

This is apparently due to a mobilization in the blood stream of the nitrogen of the myxedema fluid, and this is later excreted by the kidney. The rise seems to be most marked in cases in which there is some slight renal impairment.

For the clinician, the important thing to remember is that the determination of the nonprotein nitrogen is the least sensitive of all tests of renal function and is elevated only in patients who have extreme renal injury. The phenolsulphonphthalein test is more sensitive, and the various dilution and concentration tests which are available are the most sensitive of all, but even these will not pick up early degrees of renal injury. Roughly, it can be said that the nonprotein nitrogen is never elevated when the phenolsulphonphthalein excretion is normal, but in many cases the phenolsulphonphthalein output will be low with a normal nonprotein nitrogen. Hence the phenolsulphonphthalein test is more reliable, as it will recognize earlier degrees of injury. These relations are shown in table 3. The use of the nonprotein nitrogen as the sole test of renal function, particularly by surgeons who seek by this one test to exclude nephritis before operation, is an extremely unsound and unsafe procedure and is responsible for the death of many patients in the hospitals of this country from postoperative renal failure. It should be emphasized again and again that an elevation of nonprotein nitrogen signifies only serious renal failure; it does not indicate the chronic nephritis of lesser grades which may kill the patient after operation. The question of expense should also be considered. In our hospital it costs us about 4 cents to do a phenolsulphonphthalein test and $1.20 to determine the nonprotein nitrogen. Exceptionally, a case will be encountered in which, because of incontinence, coma or convulsions, a phenolsulphonphthalein determination is impracticable. In these cases, it is justifiable to do a nonprotein nitrogen determination directly.

TABLE 3.—*Relation of Nonprotein Nitrogen Concentration to Phenolsulphonphthalein Excretion* *

Phenolsulphonphthalein Excretion, per Cent	Nonprotein Nitrogen, Mg. per 100 Cc.																										Total Number of Cases
	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-160	161-170	171-180	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270	271-280	281-290	
81-85	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
76-80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
71-75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
66-70	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
61-65	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
56-60	3	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
51-55	2	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10
46-50	2	8	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12
41-45	5	9	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17
36-40	6	7	1	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18
31-35	2	5	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10
26-30	2	3	4	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12
21-25	4	3	4	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
16-20	..	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
11-15	1	2	2	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	8
6-10	2	2	1	..	1	1	1	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	12
0-5	..	1	1	1	1	1	1	1	2	1	..	1	1	..	1	1	..	1	..	..	1	..	..	..	..	..	1	17
Total cases	33	63	20	9	4	3	3	3	2	3	..	1	1	..	2	1	..	1	..	1	1	..	1	..	..	..	1	153

* This comparison of 153 cases in which both the nonprotein nitrogen and phenolsulphonphthalein tests were done shows that the dye test frequently falls when the nonprotein nitrogen is normal, and hence is a more delicate test of renal function. It also shows that the nonprotein nitrogen is not elevated when the phenolsulphonphthalein excretion is normal, and hence a determination of nonprotein nitrogen should not be made under these circumstances.

3. *Never ask for the creatinine value of the blood unless the nonprotein nitrogen content is above 60 mg. Then determine the concentration of creatinine as a matter of routine.*

The kidney normally excretes creatinine more easily than urea and uric acid. Hence creatinine is the last substance to be retained, and when its concentration is elevated a more extreme grade of renal injury is indicated. The relationship between the nonprotein nitrogen and creatinine is somewhat similar to that between the nonprotein nitrogen and phenolsulphonphthalein. The creatinine is never elevated when the nonprotein nitrogen content is normal, and the nonprotein nitrogen content may be elevated either with a normal or with a high creatinine value. Hence the nonprotein nitrogen is a more delicate test of renal function but the creatinine has a more serious prognostic value. Such a comparison is shown in table 4. Furthermore, in our series of 200 consecutive specimens of blood in which the nonprotein nitrogen value was normal and in which only creatinine determinations were done, four contained more than 2 mg. per hundred cubic centimeters; i. e., 2.1, 2.9, 3.4 and 3.4. One of the latter was in a patient recovering from acute uremia in whom the nonprotein nitrogen returned to normal before the creatinine.

The fact that a high creatinine value means an early mortality has been rather generally diffused through the medical profession, but there is an important exception to this rule which is not so generally known. In chronic conditions, a high creatinine value usually means death within a few months. In acute conditions, such as acute uremia, anuria and renal colic, it means nothing, but the prognosis depends on the underlying lesion. Therefore it is necessary to decide whether the nitrogen retention is due to an acute or to a chronic condition. Two points are of help in this connection. In the first place, the history and the physical signs in the case will often help in the decision. Second, Brown and Roth [7] have shown that in chronic nephritis the hemoglobin and the red cells fall roughly in proportion to the rise in creatinine. Therefore, if a patient shows a high creatinine value and a marked anemia, the supposition is that the condition is chronic and the prognosis poor. If, on the other hand, the patient shows a high creatinine content and a normal blood picture, it may be assumed that one is dealing with an acute uremic state and that a much better prognosis may be given. The point to which nonprotein nitrogen concentration may rise before it is worth while to determine the creatinine content may be conservatively set at 60 mg. per hundred cubic centimeters.

7. Brown, G. E., and Roth, G. M.: The Anemia of Chronic Nephritis, Arch. Int. Med. **30**: 817-840 (Dec.) 1922.

4. *Order determinations of the uric acid content in cases only of gout or suspected gout.*

While the uric acid concentration in the blood rises also in uremia, for practical clinical purposes its determination adds nothing of value although it is necessary in many problems of clinical investigation.

In gout, uric acid determinations have considerable importance. Some attention must be paid to the methods employed, however. The older tests were more specific for uric acid, and it was first precipitated by silver lactate from the blood before its determination. These older tests give normally somewhat lower readings. In the more recent methods of Benedict and Folin which are now in general use, the uric acid content is determined directly on the protein free filtrate. This is simpler, but other substances besides uric acid are also included. Normally with this method there will not be more than 4.5 mg. per hundred cubic centimeters of blood. Patients with gout will usually show values of from 5 to 9 mg., and even larger quantities may be found in uremia. There is no significant change in the blood uric acid level during the acute attacks of gout. It is not known whether gout ever occurs with normal blood uric acid levels, but at all events a low blood uric acid is very strong evidence against the diagnosis of gout. The uric acid in the blood can be lowered by treatment with cinchophen and the salicylates. Since gout is seen principally in men, and since the typical arthritis of the big toe is seen only in about half the cases, a blood uric acid is particularly indicated in male patients with chronic arthritis of undetermined origin.

5. *Order blood sugar determinations in cases only of diabetes or of suspected diabetes or hypoglycemia.*

The exact interpretation of blood sugar figures will depend to some extent on the method employed. The older methods of Lewis and Benedict and their modifications, such as the Epstein and the Myers and Bailey methods, give higher readings, particularly in uremia. The Folin-Wu method, which is now in most general use, also includes some substances which are not dextrose, and gives an intermediate group of normal values, while the new methods devised by Benedict, and more recently by Folin, are more specific for dextrose and give lower values. These will probably come into most general use in the near future. I have reported elsewhere a study of the blood from 136 normal patients by the new Benedict method.[8] The sugar ranged from 50 to 120 mg., with a mode of between 75 and 85 mg. per hundred cubic centimeters.

The carbohydrate metabolism and nitrogen metabolism in the body are relatively independent processes, and hence it is futile always to order, as many physicians do, both nonprotein nitrogen and sugar determinations in all types of patients. The indications for these two tests are separate and distinct but not conjoint (table 5).

But when one attempts to define the indications for blood sugar determinations, one runs into some difficulty. Of course, it is desirable to use the test in cases of diabetes and suspected diabetes; but, according to Joslin,[9] more than two thirds of a series of diabetic patients were without symptoms. Nor can one trust wholly to the presence of sugar in the urine as a guide, since the fasting blood sugar usually starts to rise before sugar appears in the urine. Again, it is not practical to test all patients as a matter of routine to determine the amount of sugar in the blood, for, as I have already shown, the extremely high percentage of negative results and the added expense do not justify the effort. A less comprehensive list of criteria which will enable one to pick out the diabetic patient must therefore be drawn up.

In the first place, in any patient who shows glycosuria the fasting blood sugar should be estimated. In the acute progressive form of diabetes, the presence of glycosuria, polydipsia and polyuria will be a sufficient guide to the existence of diabetes, so that these cases will not be missed. Aside from these patients, the other types of diabetes will occur mainly in three groups: patients with obesity, patients with arteriosclerosis and patients with gallbladder disease. Therefore patients with any of these conditions should be scrutinized carefully and if they are going to be subjected to any unusual strain, such as a surgical pro-

TABLE 4.—*Relation Between Nonprotein Nitrogen and Creatinine Values**

Creatinine: Mg. per 100 Cc.	Nonprotein Nitrogen: 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-160	161-170	171-180	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270	271-280	281-290	Total Number of Cases
0- 1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
1- 2	14	4	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19
2- 3	18	7	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29
3- 4	3	10	3	5	..	..	1	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
4- 5	4	5	8	5	3	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
5- 6	..	1	2	1	2	2	3	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	13
6- 7	..	..	..	1	1	..	5	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	10
7- 8	..	..	..	2	1	1	..	2	1	1	..	..	1	..	..	1	..	..	1	..	..	..	..	1	..	12
8- 9	..	..	..	1	..	..	1	2	..	..	..	..	1	..	..	..	..	2	..	1	..	..	..	..	..	8
9-10	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	3
10-11	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3
11-12	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
12-13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	..	3
13-14	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	..	1	..	1	..	..	..	..	6
14-15	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
15-16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
16-17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
17-18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
18-19	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
19-20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
20-21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Total cases	39	27	17	16	7	9	10	6	3	3	6	1	4	1	2	4	..	4	3	1	1	..	1	1	1	167

* The close correlation existing between a rising nonprotein nitrogen and a rising creatinine is shown by the linear arrangement of the frequencies in this table, which is based on 167 cases. A tendency will also be noted for the rise in creatinine to lag somewhat behind the nonprotein nitrogen, thus pulling the curve upward. Only cases in which the nonprotein nitrogen values were more than 40 mg. per hundred cubic centimeters are considered in this table.

8. Rockwood, R.: A Study of the New Benedict Method for the Determination of Blood Sugar, J. Biol. Chem. **69**: 187-196 (July) 1926.

9. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1923, p. 335.

cedure, a blood sugar determination should be done even in the absence of glycosuria. A small percentage of furunculosis will turn out to be of diabetic origin. Vulvitis is a frequent symptom at the onset of the disease in fat women, but this symptom is usually accompanied by glycosuria. Retinitis, which will take the patient to the ophthalmologist because of failing vision, is frequently associated with diabetes of the arteriosclerotic type. Ulcers on the feet and gangrene should immediately make the physician think of the possibility of both diabetes and a vascular lesion being present.

Persistently elevated fasting blood sugar above 125 mg. per hundred cubic centimeters usually indicates diabetes, but a mild diabetes may exist with a normal fasting blood sugar, particularly if there has been previously some restriction in the carbohydrate intake. Nondiabetic hyperglycemias are seen principally in severe infections, after general anesthesia, in uremia, after brain injuries, and in asphyxial conditions; they must be considered in determining the significance of a high fasting blood sugar.

The recognition of the hypoglycemic symptoms following the use of insulin has called attention to the existence of similar symptoms in patients who have not taken insulin in whom the blood sugar is found to be extremely low and in whom the symptoms are immediately controlled by the administration of dextrose. Since the liver has a great deal to do with the regulation of the blood sugar level, one finds that such cases have been reported after operations about the liver, in gunshot wounds of the liver, in phosphorus and chloroform poisoning, and in kala azar. Hypoglycemia may also occur in profound undernutrition, as in patients with diabetes who were formerly treated by starvation methods. It has been reported in cases of nervous indigestion characterized by hypoglycemic symptoms before each meal. Cases of hypoglycemia have been studied in carcinoma of the islands of Langerhans and in status lymphaticus in children. It is seen not infrequently as an antemortem event in patients dying from any cause, and in such cases it probably represents a terminal failure of the liver to maintain the normal blood sugar level. Doubtless it will be found in other conditions in future studies.

Blood sugar estimations are used extensively by many physicians in the treatment of diabetes. Two schools of thought exist in the country at the present time. One group emphasizes the importance of normal blood sugar and tries to bring the blood sugar within normal limits in every patient. The other group is satisfied to control the glycosuria and symptoms and more or less to ignore the blood sugar level in most cases. The argument is too lengthy to enter into here. I myself belong to the latter group, since I am not impressed by the hypothetic dangers that might arise from adding a second teaspoonful of dextrose to the half bucket of blood mentioned before, but I am still open to conviction on the subject. Joslin[10] calls attention to the fact that the appearance of a few grams of sugar in the urine is accompanied by an alteration in the respiratory quotient, but only a very marked increase in the blood sugar is accompanied by any change in the quotient. He states that the clinician should take this well to heart and should be slow to substitute estimations of sugar in the blood for those of sugar in the urine. It has also been shown that the level of the blood sugar cannot be used as a guide for the regulation of insulin dosage.

Table 5.—*Relation Between Blood Sugar and Nonprotein Nitrogen Concentration in Blood* *

Nonprotein Nitrogen in Blood, Mg. per 100 Cc.	Blood Sugar: 50-75	76-100	101-125	126-150	151-175	176-200	201-225	226-250	251-275	276-300	301-325	326-350	351-375	376-400	401-425	426-450	451-475	476-500	501-525	526-550	551-575	576-600	601-625	626-650	651-675	676-700	701-725	726-750	751-775	776-800	801-825	Total Number of Cases
21- 30	16	101	73	21	5	4	4	3	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	231
31- 40	11	153	392	121	50	11	7	6	8	8	2	2	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	775
41- 50	7	30	27	20	9	6	1	2	..	..	..	3	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	108
51- 60	2	3	7	7	4	3	1	1	1	..	..	2	1	2	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	36
61- 70	..	..	4	..	1	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	11
71- 80	..	1	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
81- 90	..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
91-100	..	..	1	3	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	7
101-110	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4
111-120	..	2	3	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
121-130	..	..	..	1	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
131-140	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
141-150	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
151-160	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
161-170	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
171-180	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
181-190	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
191-200	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
201-210	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
211-220	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
221-230	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
231-240	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
241-250	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
251-260	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
261-270	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
271-280	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
281-290	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Total	36	292	511	180	76	29	17	14	12	11	2	7	4	5	..	2	2	2	..	1	..	1	..	..	..	..	..	..	..	..	1	1,205

* The lack of relationship between blood sugar and blood nonprotein nitrogen is shown by the scattering of the cases. After leaving the upper left hand corner of the table, where the normal cases are found, it will be seen that the nonprotein and sugar rise as independent factors. A few cases tend to form a straight line down the middle of the table. This represents the interesting group of diabetes associated with uremia which the author plans to discuss more in detail at a later time.

6. *Ask for a test of the carbon dioxide combining power of plasma in:*

(*a*) *Diabetic patients with diacetic acid in the urine.*
(*b*) *Uremic patients with nitrogen retention and dyspnea.*
(*c*) *Patients showing toxic symptoms who are receiving large doses of alkali.*
(*d*) *Conditions associated with disturbed motility of the gastro-intestinal tract.*
(*e*) *Tetany of all types.*

10. Joslin, E. P.: Diabetic Metabolism with High and Low Diets, Carnegie Institution of Washington, 1923, p. 195.

The theory of the changes in the acid-base balance in the body in health and disease is somewhat complicated, and for this reason many physicians hesitate to apply this knowledge when they are confronted by a concrete case. For practical purposes, however, an extreme simplification is possible, although perhaps at the expense of a little accuracy.

Of all the methods that have been suggested for the determination of changes in the acid-base balance, the test for the determination of the carbon dioxide combining power or capacity on plasma by the Van Slyke method has proved itself the most practical and most important. If I were to be limited to one chemical test on blood in the practice of medicine I would choose this, as I believe that it would give me more important information where it is most needed in sick patients than any other. The technic is not difficult to learn, and the test can be done in about five minutes after the plasma is removed from the cells, although, as I have said before, it is probable that none of these tests would be done by the general practitioner himself. Normal patients give values for the carbon dioxide combining power of from 50 to 70 per cent by volume (cubic centimeters of gas per hundred cubic centimeters of blood). When the reading is less than 50 per cent by volume, the patient is suffering from a tendency to acidosis; if more than 70 per cent, from alkalosis.

While it is theoretically desirable in certain conditions to determine the actual hydrogen ion concentration of the blood in addition to the carbon dioxide combining power, practically no method suitable for routine use in hospital laboratories has as yet been devised.

In considering the relation of the fall of carbon dioxide combining power to the presence of symptoms, one finds that almost any severe illness may cause a fall to 40 per cent at times, and hence the zone from 50 to 40 per cent can be disregarded. Mild symptoms of acidosis usually begin at from 30 to 35 per cent; and when the combining power reaches from 15 to 20 per cent in diabetic acidosis, drowsiness and coma-like symptoms are present. In other types of acidosis, such as that induced by the administration of calcium and ammonium chloride, this level may be reached without severe symptoms. The difference is due to the narcotic effect of the acetone bodies in diabetic acidosis, which are not present in other conditions. In conditions of extreme acidosis, the carbon dioxide capacity may fall as low as from 5 to 10 per cent by volume.

While moderate degrees of acidosis are observed in many conditions and severer grades in some uncommon conditions, for practical purposes the clinician is concerned with acidosis of two types; i. e., that seen in nephritis and that seen in diabetes.

Nephritic acidosis is a complication of uremia. As the kidney function fails, the sulphates and phosphates are also retained in addition to the nitrogenous products, and these substances are apparently mainly responsible for the fall in the blood bicarbonate that occurs. Acidosis occurs as a terminal condition in practically all cases of uremia with marked nitrogen retention. Clinically its presence is usually manifested by dyspnea of the sighing Kussmaul type, and while by no means all the dyspneas of uremia are due to acidosis, this furnishes a sufficient indication for the determination of the carbon dioxide combining power of the plasma.

The presence of acetone bodies in the blood and tissues is probably mainly responsible for diabetic acidosis, although there is some evidence to show that occasionally other organic acids may be involved, since the carbon dioxide combining power does not always parallel the acetone body content of the blood. In diabetic acidosis due to the presence of the acetone bodies, one has at one's disposal other methods of measurement of the degree of acidosis, such as: (1) the test for acetone bodies in the blood; (2) the test for acetone in the urine (sodium nitroprusside), and (3) the test for diacetic acid in the urine (ferric chloride).

Accurate quantitative methods of measuring the quantity of acetone bodies in the blood are available, but they are too complicated for routine use. Wishart, however, has devised a rough qualitative test with sodium nitroprusside on serum or plasma, which gives an approximate indication of the amount present in the blood. Similar tests for acetone in the urine with sodium nitroprusside are familiar to all physicians. It should be remembered, however, that sodium nitroprusside tests in both the blood and the urine are not specific for acetone but will also react with diacetic acid when it is present. The ferric chloride test, however, reacts only with diacetic acid. Hence we never have a positive ferric chloride test without also having a positive test with sodium nitroprusside. Acetonemia and acetonuria are frequently seen in nondiabetic conditions, particularly those accompanied by starvation and semistarvation as after surgical procedures, and have little clinical significance. Sometimes their presence will be accompanied by slight symptoms of malaise, but this disappears in a few days as the body adjusts itself to the altered metabolism.

A study of forty-four cases of diabetes in which satisfactory records were available for comparison of these tests, made in my laboratory by Mr. Frederick Wolf, showed that the tests almost constantly arranged themselves in the following order of delicacy:

1. Acetone (sodium nitroprusside) in blood.
2. Acetone (sodium nitroprusside) in urine.
3. Diacetic acid (ferric chloride) in urine.
4. Carbon dioxide combining power in blood.

In other words, the carbon dioxide combining power never falls in diabetic acidosis unless diacetic acid is present in the urine, while diacetic acid may sometimes be present with a normal carbon dioxide combining power. Therefore the presence of diacetic acid in the urine is the indication for the determination of the carbon dioxide combining power, since symptoms of acidosis do not occur until the latter falls to about 35 or 30 per cent. The test for acetone in the blood is too delicate to be of any practical value, and the test for acetone in the urine is so delicate that it signifies little as far as the patient is concerned.

One exception to this rule is in cases of diabetes accompanied by nephritis and uremia in which the kidneys are impermeable to the acetone bodies, which may accumulate in the blood sufficiently to lower the sodium bicarbonate concentration before diacetic acid appears in the urine.

The relationship between blood sugar and carbon dioxide capacity is not so constant, but a study of seventy-nine cases of diabetes in which both tests were done in our laboratory shows that, except in cases treated by insulin, the carbon dioxide concentration does not fall significantly, as a rule, until the blood sugar reaches about 300 mg. In cases treated by insulin there is a tendency for the sugar to fall relatively faster than the carbon dioxide rises.

When the opposite condition of alkalosis is considered, a similar state of affairs is found. Theoretically,

many conditions may produce an alkalosis, but practically there are only three conditions in which the clinician suspects alkalosis and wishes laboratory confirmation. These are:

1. Overdosage of sodium bicarbonate or alkali, particularly in the presence of renal injury. This sometimes occurs in the Sippy treatment of peptic ulcer. The symptoms of this type of alkalosis may be very slight, such as a little headache, anorexia and malaise.

2. Conditions associated with disturbed motility of the gastro-intestinal tract. These conditions are considered more in detail in the section on blood chlorides.

3. Tetany. This condition presents many different types, but one large group is associated with an alkalosis. This may occur as a result of overbreathing or as a result of the conditions listed under 1 and 2. As a rule, when the patient has a carbon dioxide combining power of more than 100 per cent by volume, he will have tetany; but this rule is subject to many exceptions.

7. Order chloride, nonprotein nitrogen and carbon dioxide combining power determinations in all cases of disturbance of gastro-intestinal motility with marked toxemia.

In interpreting the report of analyses for blood chloride, the clinician should always keep in mind the methods that have been employed. The chloride concentrations vary slightly in plasma and whole blood, and either of these may have been used for the analysis. Again, the chloride may be reported as the chloride ion or calculated as sodium chloride on the assumption that all the chlorine is bound as sodium. Different values will result from each of these methods. These are shown in table 1. Probably the determination on whole blood and its calculation as chloride is the most correct on theoretical grounds. Again, the method of Whitehorn, which is in most general use in the laboratories of the country, tends to give slightly lower readings than those of some other workers.

While the determination of chlorides in nephritis and uremia has been of great value in experimental studies, little of value has been learned which helps in the practical diagnosis and treatment of these patients. The field is not exhausted yet, however. A low chloride figure is occasionally seen in uremia, but its exact significance is unknown as regards treatment.

The most important use of the chloride test is in the diagnosis and treatment of the toxemia that is frequently associated with disturbances of gastro-intestinal motility. The fall in chlorides tends to be associated with a rise in the carbon dioxide combining power (alkalosis) and a rise in nonprotein nitrogen. Patients with this type of alkalosis are tremendously sick and toxic in contradistinction to those with alkalosis resulting from an overdosage of alkali, in whom the symptoms may be quite mild. Rockwood and Anderson [11] have recently reviewed the literature on this type of toxemia and reported fifty-two cases from their own service with these chemical changes in the blood. They list the following indications for ordering nonprotein nitrogen, carbon dioxide capacity and chloride tests from the laboratory:

1. All cases of partial or complete obstruction in the gastro-intestinal tract.

2. All cases of general peritonitis when they show any degree of general toxemia.

3. All cases of protracted vomiting from any cause.

4. All cases of burns with much toxemia.

5. All general medical cases showing marked abdominal distention.

6. Any other abdominal lesion showing clinically the type of toxemia described.

It should be noted that it is unnecessary to consult the laboratory unless the patient is extremely sick, as mild cases will show practically nothing.

8. Ask for serum bilirubin or icterus index tests in cases of jaundice but do not pay too much attention to borderland values.

Recent advances in our knowledge of the physiology of the liver have shown that when the liver is severely injured the bilirubin is not excreted by the liver but backs up in the blood and tissues, causing jaundice. Apparently the bilirubin is formed principally in the bone marrow and spleen, while the liver takes little part in its manufacture but bears much the same relationship to the excretion of bilirubin as the kidney does to urea. The concentration of bilirubin in the blood does not always parallel that in the tissues, particularly when the liver function is rapidly changing, as in acute catarrhal jaundice. It is therefore of considerable value in studies of liver function to have some quantitative method for determining the amount of bilirubin in the blood. It is unfortunate, therefore, that both the methods which are in general use are technically unsatisfactory and do not give very accurate readings.

The van den Bergh test is a specific test for bilirubin. In this country the results are usually reported in milligrams per hundred cubic centimeters. Sometimes the European method of reporting in units is employed. One unit is equal to 0.5 mg. Usually there is too little bilirubin in normal serum to match in the colorimeter, but it may occasionally rise as high as 2 mg., or 4 units, in normal individuals. The chemical changes that take place in the reaction are not entirely known and it is sometimes difficult to get accurate checks on duplicate samples of blood. Frequently colors are produced which do not quite match the shade of the standard, and these make accurate reading difficult. Large increases in bilirubin are significant. Smaller rises are more difficult to interpret. Unfortunately, it is in this group of cases that an accurate test would be of great value, since it might serve to differentiate cholecystic and hepatic attacks from other types of intra-abdominal disease. In fact, this use has been suggested by certain clinicians. However, being well acquainted with the technical difficulties in the test, I myself would not care to have my gallbladder removed on the basis of a slightly elevated bilirubin content of the blood reported from any laboratory. The quantitative van den Bergh test is often of value when jaundice is suspected in colored patients. It is also of considerable value in following in a rough quantitative way the fluctuations in the intensity of jaundice.

The use of the van den Bergh test as a qualitative test for the differentiation of the type of jaundice is of less importance. A direct type of reaction is supposed to indicate an obstructive type of jaundice, and an indirect or delayed reaction a hemolytic type. This is approximately but not absolutely true, and many other factors must be taken into consideration in the interpretation.

The color of the serum is for the most part due to bilirubin, provided the presence of the carotinoid group of pigments can be excluded. Therefore, for many years attempts have been made to measure the amount of bilirubin in the blood by measuring the intensity of the yellow color against a known standard. This has

11. Rockwood, Reed; and Anderson, R. S.: Changes in the Chloride Metabolism in Abdominal Lesions, Surg. Gynec. Obst. **46**: 352 (March) 1928.

recently been repopularized in this country under the name of the "icterus index." The figure for the icterus index is usually about ten times that of the corresponding figure for serum bilirubin in milligrams per hundred cubic centimeters. Unfortunately, many serums have an interfering shade of brown so that they cannot be successfully matched against any known standard. This is particularly true of serums with normal and near normal values, and hence this test is worth least in the group of cases in which it is needed most, i. e., the borderland case. In some cases there is a decided discrepancy between the bilirubin values as determined by the two methods. This is particularly true in some of the anemias. The meaning of this discrepancy is unknown.

Both of the methods described are of decided value in certain types of cases, provided too much is not expected of them. Many clinicians, however, do expect too much of them.

9. *Ask for blood calcium determinations in cases only of tetany of unknown origin.*

Probably more to little purpose has been written about the calcium of the blood than about any other chemical constituent. There are about 7½ grains (0.5 Gm.) of calcium in the entire circulating blood. Since there is little or no calcium in the red blood corpuscles, it is customary to make the test on serum. The methods used for its determination are very difficult and tedious, and experts are unable to get checks constantly on duplicate blood samples closer than 0.5 mg. per hundred cubic centimeters. In the ordinary clinical laboratory where only an occasional calcium determination is made, the discrepancy between duplicates may run as high as 1 mg. Yet paper after paper has appeared in the medical and chemical literature reporting analyses to the nearest hundredth of a milligram and attaching clinical significance to results with variations that are either entirely within the experimental error of the method or within the range that is commonly accepted as normal. While undoubtedly the concentration of calcium ion is exceedingly important for cell activity, the demonstration of minute fluctuations in the blood calcium by the chemist proves nothing in regard to what may be going on in the calcium metabolism of the tissues. Experimentally, the calcium in the blood may be raised or lowered over a wide range for short periods of time without causing any of the symptoms which various writers would ascribe to disordered calcium metabolism. This field is a new one and may yield more promising practical results in the future. Many problems of clinical investigation are now being studied as, for example, the changes in the blood calcium in fractures, and bone diseases of various kinds, but the results are not sufficiently definite as yet to be of practical value to the general practitioner. The determination of the serum calcium in tetany is at present the only clinical condition in which this test is of definite diagnostic and therapeutic value. It is being used more and more in uremia with nitrogen retention and in certain cases of jaundice.

From a practical standpoint tetany may be subdivided into two general groups; i. e., that associated with an alkalosis, as measured by a rising carbon dioxide combining power, and that associated with a low serum calcium. In the former group belong the cases of tetany due to overventilation or to overdosage of sodium bicarbonate and those associated with various gastro-intestinal diseases. In the latter group are the tetany patients with parathyroid insufficiency, cases of the tetany of uremia, and the spasmophilia or tetany of childhood. This classification is thoroughly inadequate from many theoretical standpoints and many clinical cases will not fit into either group, but it will cover most of them. In other words, in a case of tetany of unknown type one should measure both the serum calcium and the carbon dioxide combining power. If the calcium is low, calcium therapy is indicated. If an alkalosis is present, symptomatic treatment with acid salts should be carried out. In tetany due to parathyroid insufficiency, signs and symptoms usually begin to manifest themselves as the calcium falls toward 6 mg. per hundred cubic centimeters; these are relieved when the serum calcium rises to about 7 mg. Not enough carefully studied cases have been reported, however, to indicate how absolute is this threshold.

A subgroup of tetany of clinical importance is the spasmophilia associated with rickets in childhood. In rickets, as a rule, the calcium of the blood is approximately normal. It may fall at times, however, with the production of symptoms of tetany.

In uremia, as the kidney fails the inorganic salts, such as sulphate and phosphate, are retained in the blood as well as the nonprotein nitrogen. Although the phosphate cannot be excreted by the kidney, it can be excreted through the bowel wall as calcium phosphate. This compensatory mechanism apparently sometimes lowers the calcium in the blood, since low calcium values are reported in such patients and it may even fall low enough to produce tetany in an occasional case. It has been suggested by certain authors that the fine muscular twitchings and generalized tremors which are manifestations of neuromuscular instability not infrequently seen in uremia may be due to the low calcium content of the blood. More work is needed, however, before the exact place of this fact in practical clinical medicine will be known.

In cases of jaundice the coagulation time of the blood is prolonged. This is apparently due to some interference with the calcium in the formation of the clot. It has been suggested that the calcium in the blood is bound by the bile pigments and hence cannot take part in the clotting process. This fact is of considerable importance in preparing such patients for surgery, and it has been shown that the coagulation time can be restored to normal by the administration of calcium prior to operation. Many cases have been reported in which the blood calcium is normal in jaundice. Apparently here both bound and free calcium are measured. Some authors, however, report low values in some cases. In this field, therefore, a new indication may be found at some future time for the use of blood calcium determinations in clinical medicine.

In all cases treated by the parathyroid hormone described by Collip, frequent determinations of serum calcium are necessary for proper regulation of dosage.

10. *Order inorganic phosphorus tests, if practicable, in cases only of rickets and infantile tetany.*

The phosphorus compounds of the blood may be classified as follows:

1. Inorganic phosphorus.
2. Lipoid phosphorus.
3. Organic compounds other than lipoids that contain phosphorus. Their exact nature is not known. This group is frequently spoken of as organic phosphate or unknown phosphate, and groups 1 and 3 are called the acid soluble phosphates. The inorganic phosphorus is apparently confined to the plasma. Organic phosphorus is apparently limited to the corpuscles. The

inorganic phosphorus content normally is from about 2 to 4 mg. per hundred cubic centimeters, running somewhat higher in infants up to 7 mg.

In nephritic patients with nitrogen retention and uremia, the inorganic phosphorus and the sulphates rise together with the nitrogen. It has been suggested that this may furnish evidence applicable to the prognosis of nephritis, but there is no evidence that this is better than the creatinine estimation which is in more common daily use. In nephritis the values may reach as much as 20 or 30 mg. per hundred cubic centimeters.

In rickets the inorganic phosphorus in the blood frequently falls, sometimes as low as 0.8 mg. per hundred cubic centimeters. It has been stated that an inorganic phosphorus concentration in children under 2½ years of 3 mg. or less occurs only in active rickets. As I have said before, the calcium is usually normal except in cases of spasmophilia or tetany. While the determination of calcium and phosphorus in the rickets and tetany of childhood is theoretically of value, in practice it is somewhat difficult. Rather large quantities of blood are necessary for accurate analyses with proper checks and such quantities are often rather difficult to secure from infants, it frequently being necessary to puncture the jugular vein. It should not be forgotten that calcium salts by mouth will rather rapidly raise a low serum calcium. Frequently children are sent to the laboratory for such a determination who are taking calcium salts on the prescription of a physician. The results of such tests cannot be interpreted.

SUMMARY

The indications for chemical tests of the blood and their interpretation are as follows:

1. Never ask for both nonprotein nitrogen and urea tests in the same patient.
2. Except in emergency, never ask for a nonprotein nitrogen determination when the excretion of phenolsulphonphthalein is normal. Determine the output of phenolsulphonphthalein first.
3. Never ask for the creatinine value of the blood unless the nonprotein nitrogen content is above 60 mg. per hundred cubic centimeters. Then determine the concentration of creatinine as a matter of routine.
4. Order determinations of the uric acid content in cases only of gout or suspected gout.
5. Order blood sugar determinations in cases only of diabetes or suspected diabetes or hypoglycemia.
6. Ask for a test of the carbon dioxide combining power of plasma in:

(*a*) Diabetic patients with diacetic acid in the urine.
(*b*) Uremic patients with nitrogen retention and dyspnea.
(*c*) Patients showing toxic symptoms who are receiving large doses of alkali.
(*d*) Conditions associated with disturbed motility of the gastro-intestinal tract with marked toxemia.
(*e*) Tetany of all types.

7. Order chloride, nonprotein nitrogen and carbon dioxide combining power determinations in all cases of disturbance of gastro-intestinal motility with marked toxemia.
8. Ask for serum bilirubin or icterus index tests in cases of jaundice, but do not pay too much attention to borderland values.
9. Ask for blood calcium determinations in cases only of tetany of unknown origin.
10. Order inorganic phosphorus tests, if practicable, in cases only of rickets and infantile tetany.

Lombard and Greene streets.

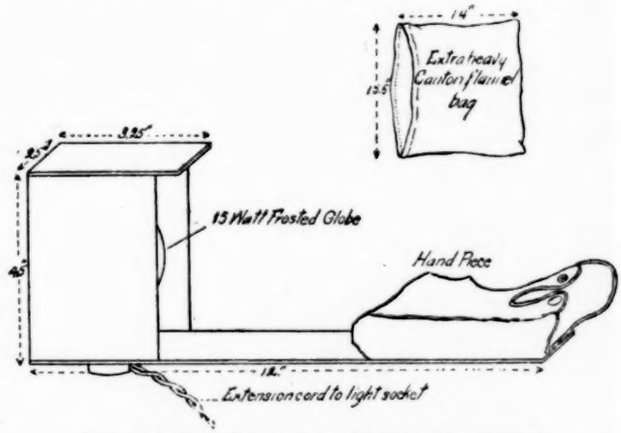
Clinical Notes, Suggestions and New Instruments

AN APPARATUS FOR APPLYING HEAT TO THE EXTREMITIES AT NIGHT

J. H. MUSSER, M.D., NEW ORLEANS

Mr. Florian Levy is a sufferer from Buerger's disease involving the upper extremities. The fingers have improved very much under active treatment, and the greatest relief has been given by baking. In order to secure a sufficiently long period of exposure to heat he was in the custom of baking his hands at night under the ordinary apparatus used for such purposes. This was found very inconvenient, as it was impossible to keep his hands for any length of time in the baker during sleep. He therefore devised the apparatus illustrated here, which is particularly valuable to him as he is a traveling salesman and it can be carried round in a very small space.

The apparatus consists of a glove, with the fingers removed, fastened to a light board. At the other end of the board electric wiring has been attached which connects with a 15 watt frosted bulb enclosed on three sides with a light fibrous material. The holder prevents the hand reaching to the bulb, so that there is no danger of burning. This light apparatus is then covered



Apparatus for applying heat to the extremities at night.

with a cloth of extra heavy canton flannel which can be fastened with a string around the wrist, sufficient heat being generated by the electric light. Various bulbs were tried, but the present one is the only one that would not give too much heat. The apparatus is so light that it in no way interferes with his sleep or his turning from side to side. The wire is long enough to be attached to any reasonably close light socket.

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TULAREMIA: REPORT OF CASE IN FLORIDA

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Dec. 20, 1927, L. F. V. of Bradenton, Fla., cleaned a rabbit killed by himself, and December 26 he again cleaned a rabbit. On one of these two dates, the patient thinks probably the first, a bone penetrated the right thumb.

December 29, he came to my office. There was no redness of the thumb, only a rather innocent looking lesion which appeared nearly healed. I applied iodine. December 31, the patient had a chill, a temperature of 102 F., a pulse rate of 72 and general aching; he felt very uncomfortable. The pharynx was slightly red, and I was inclined to think that this was the cause of the illness. The lesion on the thumb was apparently not causing the disturbance.

Jan. 2, 1928, lymphangitis over the radius and inner surface of the upper arm occurred, with three small red nodes in the course of the lymphatics and pain in the axilla. The lesion on the thumb now began to show redness and pustules. When

the loose skin over the pustules was removed, the small cupped shaped lesion mentioned by other observers was seen. The small gland in the axilla could now be palpated.

The temperature, ranging from 99 to 103, continued, and the lymphangitis abated. The pulse rate was never more than 90. January 11 the blood count showed 10,600 leukocytes. The differential count was polymorphonuclears, 60 per cent; small lymphocytes, 23 per cent; large lymphocytes, 10 per cent, and mononuclears, 7 per cent.

The report on the blood serum taken January 15, and sent to the Hygienic Laboratory, Washington, D. C., was as follows: "The serum was found to agglutinate *Bacterium tularense* in all dilutions to 1:320."

The fever continued until January 18. The gland in the axilla suppurated, but healed promptly after incision, March 6.

Treatment consisted of wet dressings of acriflavine applied to the thumb. No internal treatment was given except for symptomatic relief.

A RAPID METHOD FOR THE REMOVAL OF PLASTER-OF-PARIS CASTS *

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The present methods for the removal of plaster-of-paris casts entail the use of special instruments, cause damage to knives, and are laborious. Even the preliminary moistening of the surface of the cast with hydrogen peroxide, acetic acid or saline solution saves little in time or labor. Strong acids are not employed because of the possible injury to patient or instrument.

The observation of Shelling and Maslow [1] that sodium citrate combines with calcium to form a soluble un-ionizable compound and that it is also capable of rapid decalcification of bone [2] led us to believe that this salt will have a similar effect on calcium sulphate (plaster of paris). The observations of Nichols and Theis [3] that sodium citrate will keep barium sulphate in solution, and the conductivity titration experiments of Shear and Kramer [4] with calcium chloride demonstrating the specificity of citrate in decreasing conductivity, strengthened our supposition. Simple experiments were carried out to determine the ease and rapidity with which casts can be removed by this means, as compared to older methods. The results as to saving of time and effort were most gratifying.

TECHNIC

With an ordinary cast knife, a superficial cut is made on the cast as a marker. A 25 per cent solution of sodium or potassium citrate is dropped from a dropping bottle along the outlined pattern. The cast is softened at once and is then cut with an ordinary scalpel or cast knife.

The advantages of this method are:

1. The ease and rapidity with which a cast may be removed.
2. The elimination of elaborate cast-cutting instruments.
3. The ease and rapidity with which fenestras of any size or shape may be cut.
4. Its inexpensiveness.
5. The absence of chemical injury to patients or instruments.

* From the Surgical Service of Montefiore Hospital.

1. Shelling, D. H., and Maslow, H. L.: J. Biol. Chem., to be published.
2. Shelling, D. H., and Halpersohn, M. B.: A Rapid Method for Decalcification, Arch. Path. **5**: 835 (May) 1928.
3. Nichols, M. L., and Theis, O. J., Jr.: J. Am. Chem. Soc. **48**: 302, 1926.
4. Shear, M. J., and Kramer, B.: Proc. Soc. Exper. Biol. & Med. **24**: 624, 1927.

The Importance of Correct Posture Is Obvious.—The importance of a correct posture in developing and maintaining health is so obvious that it should be unnecessary to emphasize it; unfortunately, it is forgotten or disregarded to an alarming extent. Posture involves the position of the feet, of the trunk and of the head—the feet, particularly, in standing and walking, the trunk and head in sitting.—Blake, quoted in Dansdill's Health Training in School, p. 196.

Special Article

PRACTICAL SUGGESTIONS REGARDING BIOCHEMICAL DIAGNOSTIC METHODS *

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During the past twenty-five years biochemistry has become a subject of ever increasing importance in medicine. The diagnosis, prognosis and treatment of the so-called metabolic diseases is almost wholly dependent on biochemistry, and there is hardly a branch of medicine or surgery at the present time that does not have need for the diagnostic and prognostic information obtainable from a chemical blood analysis. Whereas relatively few medical schools offered modern courses in biochemistry twenty-five years ago, and many hospitals did not possess a pathologist, no hospital can be regarded as well equipped today which does not possess a biochemical division in its pathologic laboratory under the charge of a well trained biochemist.

By a biochemist is not meant a person who has taken a technician course [1] of a few weeks and learned the manipulation of a few technical procedures. Although the help of technical assistants in a hospital laboratory is almost indispensable, such help is positively dangerous unless the work is done under the direct supervision of some one with competent chemical training.

A biochemist competent to take charge of hospital work should have taken both lecture and laboratory courses in inorganic, organic, analytic and physical chemistry, followed by a comprehensive course in biochemistry and a practical course in pathologic or clinical chemistry. One cannot well take these courses without a suitable background of biology, physics and mathematics. The minimum requirement for such work would be the Master's degree or its equivalent.

The medical graduates of today should possess such training, but unfortunately many of them do not. Since most of the important chemical work is quantitative in nature, medical schools which do not include analytic chemistry in their admission requirements are placing a handicap on many of their graduates.

The various biochemical tests of diagnostic and prognostic import which we have attempted to demonstrate have been rather arbitrarily divided into two groups: (1) simple tests which are generally carried out in the physician's own office and (2) those tests which require rather more time and equipment than the average physician can give to them. In case the physician finds it necessary to have this work done in a private clinical laboratory, he should send the specimen (or patient) to a laboratory which has been placed on the list of Approved Clinical Laboratories.[2] If such a laboratory is unavailable he should ascertain whether his laboratory consultant is properly trained to do the work he requires. Laboratory work improperly done may be worse than no laboratory work at all.

SIMPLER BIOCHEMICAL DIAGNOSTIC TESTS

Simple, rapid and accurate routine chemical procedures of urinalysis are described farther on. Since most of the tests employed are qualitative, it is essential

* Read in connection with the Exhibit of Biochemical Diagnostic Methods at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 12-15, 1928.

1. Bock, J. C.: The Technician Problem, M. J. & Record **122**: 731 (Dec. 16) 1925.
2. The list is given in THE JOURNAL, March 24, 1928, p. 981.

that the intensity of a positive reaction be described. This gives a quantitative significance to a qualitative test. The following terms are convenient: faint trace, trace, small amount, moderate amount, large amount, and very large amount. The term "faint trace" should be applied only to reactions which are very delicate; for example, to tests for protein but not to tests for sugar.

A suitable test tube rack is a great help in the analysis of several or a large series of specimens of urine. I [3] have described a rack which is arranged for three rows of tubes. The lower row holds heavy tubes, 1 inch in diameter, in which observations of the color, reaction and specific gravity are made, and from which samples of urine are taken for the tests for sugar and protein, or other tests desired. The second series of tubes is employed for the qualitative sugar test, while the upper row is used for the protein test. Such racks are constructed to hold rows of six or twelve tubes. Since the test tubes for sugar and protein are directly behind the large tube, confusion cannot arise if the work is interrupted. The racks were originally constructed of oak, but a rack has been made of Bakelite [4] which is not affected by acids.

TESTS FOR PROTEIN

Of the various tests which have been employed for the detection of protein substances (albumin, globulin, etc.) in urine, practically all involve precipitation reactions. In performing all these tests, it is essential that the urine should be perfectly clear. If it is not clear, filtration through filter paper will usually suffice for clarification, but in case this is ineffective, the urine may be shaken with powdered magnesium oxide or kaolin, and filtered.

The two most common tests are Heller's ring test and the heat test. Difficulties with the former are most often due to careless stratification or to turbid urine, and with the latter to the fact either that the urine has not been rendered faintly acid or that it has been acidified with a strong mineral acid.

As a ring test Robert's reagent (1 part of concentrated nitric acid to 5 parts of saturated magnesium sulphate) is preferred by some to nitric acid. Exton [5] considers his sulphosalicylic reagent a more specific test for serum albumin and globulin in urine than either the Heller test or the heat test.

Heller's Test.—About 1 cc. of concentrated nitric acid is poured into a small test tube (13 by 100 mm.). By means of a pipet having a small rubber bulb at one end and a ragged nontapering tip at the other end, one allows an equal amount of urine to flow down the side of the tube without inclining or moving it from the rack. By this procedure a perfect stratification may be obtained with great rapidity. In the presence of protein a white zone of precipitated protein will be observed at the point of juncture of the two liquids. If the protein is present in very small amounts, the white zone may not form until the tube has been allowed to stand for several minutes.

Heat Test.—About 10 cc. of clear urine is placed in a test tube and the upper part of the tube heated to boiling. If coagulable protein is present, this part of the urine should appear cloudy as compared with the unboiled part. If it becomes turbid, a drop or two of dilute acetic acid may be added. Turbidity is sometimes caused by phosphates, but these dissolve in the presence of dilute acids. The protein coagulum does not dissolve. Alkaline urines should be made very faintly acid with dilute acetic acid before boiling.

It is not often that a quantitative estimation of protein is necessary. It cannot be said that we possess a simple method that is entirely satisfactory. I favor the methods described by Purdy,[6] by Exton,[7] and by Wu and Ling,[8] the last named being a reasonably simple colorimetric method and one that is probably quite accurate.

TESTS FOR SUGAR

Benedict's qualitative copper reagent possesses so many advantages over any of the other qualitative reagents as a test for sugar in urine that other copper or bismuth reagents need not be considered. It is a permanent single solution. In contrast to Fehling's solution, it is not affected by uric acid, creatinine or the simple aldehydes, such as formaldehyde, which is sometimes employed as a preservative. It is, however, reduced by lactose, pentose, homogentisic acid and certain other substances which may occasionally be found in the urine. These reductions are not typical of those given by dextrose, and the careful observer would note the difference, even though there might not be anything significant in the history of the case. A patient with alkaptonuria recently came to my attention who had been treated by a number of physicians for diabetes over a period of years, despite the very characteristic symptoms of this anomaly of metabolism. Several instances have also recently come to my attention in which supposedly competent men have ruined the Benedict test by adding an equal volume of urine, despite the fact that the directions call for the addition of not more than from 8 to 10 drops of urine.

Benedict's Qualitative Reaction.—About 5 cc. of the reagent [9] is placed in a test tube and from 8 to 10 drops (not more) of the urine to be examined is added, and the mixture boiled vigorously from one to two minutes. It is allowed to cool spontaneously. In the presence of dextrose, the entire body of the solution will be filled with a precipitate, which may be red, yellow or green, depending on the amount of sugar present. If the amount of dextrose is small (under 0.3 per cent), the precipitate forms only on cooling. If no sugar is present the solution either remains perfectly clear or shows a faint turbidity that is blue and consists of precipitated urates, which need not, however, cause any confusion.

Since Benedict's reagent is boiled after the addition of the urine, it is time saving in hospital work to boil a large number of tubes at one time in a bath, a special copper rack being used to hold the tubes. The smaller Bakelite rack demonstrated fits into a two liter Pyrex beaker and holds sixteen test tubes.

Benedict's qualitative reagent is composed of 17.3 Gm. of copper sulphate, 173 Gm. of sodium citrate and 100 Gm. of anhydrous sodium carbonate made up to 1 liter with distilled water. In the preparation of the solution, the copper sulphate should be dissolved separately in about 100 to 150 cc. of distilled water and then added slowly with constant stirring to

3. Myers, V. C.: Hospital Urinalysis, New York M. J. **97**: 1127 (May 31) 1913.
4. The rack demonstrated was made by the Klett Manufacturing Company, New York.
5. Exton, W. G.: A Simple and Rapid Test for Albumin and Other Urinary Proteins, J. A. M. A. **80**: 529 (Feb. 24) 1922.
6. Purdy, C. W.: Practical Urinalysis and Urinary Diagnosis, ed. 6, Philadelphia, F. A. Davis Company, 1901, p. 80.
7. Exton, W. G.: A Simple and Rapid Quantitative Test for Albumin in Urine, J. Lab. & Clin. Med. **10**: 722 (June) 1925.
8. Wu, H., and Ling, S. M.: Colorimetric Determination of Proteins in Plasma, Cerebrospinal Fluid and Urine, Chinese J. Physiol. **1**: 161 (April) 1927.
9. Benedict, S. R.: The Detection and Estimation of Glucose in Urine, J. A. M. A. **57**: 1193 (Oct. 7) 1911.

a filtered solution (about 800 cc.) of the other ingredients and finally made up to 1 liter.

In case a positive identification of dextrose is necessary, recourse must be had to the phenylhydrazine reaction. Dextrose readily forms an osazone, but lactose and pentose sugars do not, except under special conditions, nor do they ferment directly with yeast.

Benedict has developed a quantitative reagent [9] for sugar which is quite as satisfactory as his qualitative reagent. For many years I have used a micromodification of this method which is almost as simple as the qualitative test. With a little practice, perfectly satisfactory results may be obtained.

Benedict's volumetric solution is composed of 18 Gm. of copper sulphate, 100 Gm. of anhydrous sodium carbonate, 200 Gm. of sodium citrate, 125 Gm. of potassium sulphocyanate, and 5 cc. of 5 per cent potassium ferrocyanide solution, made up to 1 liter with distilled water. The ingredients are dissolved in the same manner as those in the qualitative reagent, i. e., the copper is dissolved separately.

Micromodification of Benedict's Quantitative Method.—An estimation of the sugar content of urine, sufficiently accurate for clinical purposes, can be made employing 5 cc. of Benedict's quantitative reagent in a large test tube and a 1 cc. Mohr pipet graduated to the tip in 0.01 cc. as the buret.

With a pipet, 5 cc. of Benedict's quantitative reagent is introduced into a test tube (25 by 150 mm.) and from 1 to 2 Gm. of sodium carbonate is added. The solution is now brought to a vigorous boil with continued gentle agitation, the tube being held in the left hand with the aid of a folded filter paper as a test tube holder. With the right hand the sugar solution is run in rather rapidly, a drop at a time, until a chalk white precipitate begins to form. The solution is then run in more slowly until one drop dissipates the last trace of color, indicating the end-point in the reaction.

The 5 cc. of Benedict's solution requires exactly 10 mg. of dextrose for complete reduction. Consequently, the calculation will be: $100/\text{Titer} \times 0.01 =$ percentage of dextrose, or, more simply, 1 divided by the number of cubic centimeters of urine used gives the percentage of sugar.

TEST FOR ACETONE AND DIACETIC ACID

The most satisfactory simple reaction for acetone and diacetic acid is the one described by Rothera.[10] Rothera described the reaction as a test for acetone, but in reality it is more delicate toward diacetic acid.

Rothera's Test.—To from 5 to 10 cc. of urine are added about 1 Gm. of ammonium sulphate, from 2 to 3 drops of a freshly prepared 5 per cent solution of sodium nitroprusside, and then 2 cc. of strong ammonium hydroxide, which may be stratified on the urine. A positive reaction is indicated by the slow development of a characteristic permanganate color, roughly in proportion to the amount of the two ketone bodies present.

TEST FOR INDICAN

The indican tests are based on the oxidation of indican (indoxyl potassium sulphate) to indigo, and the solvent action of chloroform on the latter. One of the most satisfactory reagents is that of Obermayer, in which ferric chloride is employed as the oxidizing reagent (if too much ferric chloride is present, the oxidation will be carried too far).

Obermayer's Test.—To 10 cc. of urine an equal volume of Obermayer's reagent (concentrated hydrochloric acid containing about 0.3 per cent of ferric chloride) is added; from 3 to 5 cc. of chloroform is introduced and the mixture is shaken thoroughly. Sometimes the mixture will be emulsified if care is not taken in the shaking. Preliminary clarification of the urine by adding a little basic lead acetate and filtering is often a help in obtaining a good reaction. The amount of indican present in the urine will be indicated by the strength of the blue color taken up in the chloroform. In the presence of iodides some of the iodine will be taken up by the chloroform, giving a pink color.

PHENOLSULPHONPHTHALEIN RENAL FUNCTION TEST

The phenolsulphonphthalein test suggested in 1911 by Rowntree and Geraghty is the most satisfactory of the renal function tests designed to be carried out on the urine.[11] The principle of the test is very simple. A known amount of the dye is administered, the urine is collected for two hours, in one hour periods, and the excretion is measured colorimetrically after alkali has been added to the urine. The time having been noted, 1 cc. of a solution of phenolsulphonphthalein, containing 6 mg. of the dye per cubic centimeter (may be obtained already prepared in the form of ampules), is carefully administered intramuscularly in the lumbar muscles by means of an accurately graduated 1 cc. syringe. The drug normally appears in the urine in from five to ten minutes, from 38 to 60 per cent being eliminated the first hour and from 60 to 85 per cent during the first two hours. In the terminal stages of chronic nephritis the output may be 0.

Although the phenolsulphonphthalein test is hardly the equal of the blood urea estimation as an accurate measure of renal function, it is more easily carried out by the physician, and is an excellent confirmatory test for the blood urea.

TESTS FOR OCCULT BLOOD

The tests most commonly employed have been the guaiac, benzidine and phenolphthalein tests, the last two being the most delicate. In fact, they have been criticized as being too delicate. When proper dilutions are made, however, this need not be an objection. Benzidine is a very satisfactory reagent when pure, but good preparations are difficult to obtain. Phenolphthalin may be readily prepared from phenolphthalein. The chief objection to this reagent is its very great sensitivity. The tests are described for feces but may well be used for gastric contents or urine.

Benzidine Test.—A small amount of feces is suspended in about 5 cc. of distilled water, and heated to boiling to render the oxidizing enzymes inactive. A knife point full of pure benzidine (must be kept in a dark place) is then dissolved in from 2 to 3 cc. of glacial acetic acid. To this is added 3 cc. of 3 per cent hydrogen peroxide, and a few drops of the cooled fecal suspension. If blood is present a blue-green or blue reaction will occur in from one to three minutes.

Phenolphthalin Test.—A small amount of feces is suspended in about 5 cc. of distilled water and heated to boiling to render the oxidizing enzymes inactive. About 2 cc. of this cooled suspension is treated with 1 cc. of the phenolphthalin reagent and a few drops of

10. Rothera, A. C. H.: Note on the Sodium Nitroprusside Reaction for Acetone, J. Physiol. **37**: 491 (Dec. 15) 1908.

11. Geraghty, J. T., and Rowntree, L. G.: The Phenolsulphonphthalein Test for Estimating Renal Function, J. A. M. A. **57**: 811 (Sept. 2) 1911.

3 per cent hydrogen peroxide. A pinkish red forms in the presence of blood, owing to a reoxidation of phenolphthalin to phenolphthalein.

The phenolphthalin reagent is prepared by adding 2 Gm. of phenolphthalein and 2 Gm. of zinc dust to 100 cc. of 20 per cent sodium hydroxide, and heating the bright red solution until it has assumed a light yellow tone owing to a reduction of the phenolphthalein to phenolphthalin. The supernatant fluid is poured into a bottle and the access of air prevented by the addition of a little liquid petrolatum.

METHODS OF GASTRIC ANALYSIS

Although the methods of securing gastric contents have been materially changed by the Rehfuss tube, in most clinics analyses are made with the Töpfer method introduced thirty years ago. As then, the chemical analyses consist chiefly in the titration of the free hydrochloric acid and the total acidity, Töpfer's reagent being employed as the indicator for the former and phenolphthalein for the latter. In special cases, particularly suspected cases of ulcer and carcinoma, special tests are made for abnormal constituents, such as lactic acid, "occult" blood, and soluble protein with the Wolff-Junghans reaction.

TABLE 1.—*Color Indications of Degree of Acidity*

Indicator	p_H	Color	Acidity
Töpfer's reagent	1.4	Deep red	Hyperacidity
Töpfer's reagent	1.6	Reddish orange	Normal acidity
Töpfer's reagent	1.8	Orange	Normal acidity
Töpfer's reagent	2.0	Yellowish orange	Hypo-acidity
Thymol blue	2.0	Purple red	Hypo-acidity
Thymol blue	2.4	Faint pink	Hypo-acidity
Thymol blue	3.0	Yellow	Anacidity

Although the information obtainable with the Töpfer method is fairly accurate, it does not give a modern point of view. Several years ago, Shohl and King [12] attempted to employ the principles of modern physical chemistry in gastric analysis, but their methods do not appear to have been generally adopted. They employed the unique double range indicator thymol blue, which in its acid (red) range is ideally adapted to measuring the p_H of the gastric contents, and in its alkaline (blue) range can be used to titrate the (total acidity and) buffer value. The optimal peptic activity falls within a fairly narrow p_H range (from 1.6 to 1.8). In studying the gastric acidity one desires to know whether the p_H is normal, and if not, what factors are influencing it. The absence of free hydrochloric acid (p_H of 3.0 or above) may be due to lack of secretion or to a high buffer value. The buffer value is defined as the amount of tenth-normal alkali necessary to change the reaction from p_H 3.0 (no free hydrochloric acid) to p_H 9.6 (near the point of free alkali). Obviously a low buffer value might lead to a high acidity and a high buffer value to low acidity. For this reason Shohl and King regard the buffer value as more significant than the total acidity. Another determination which appears to give valuable information in this connection is that of the total chlorides.

Test Paper Method of Estimating p_H of Gastric Contents.—Silverman and Denis [13] have recently suggested a very simple method of estimating the p_H of gastric contents. The following items are needed: [14] (*a*) standard buffer solutions ranging from p_H 1.4 to 3.0; (*b*) a vial of test papers impregnated with thymol blue, and (*c*) a vial of test papers impregnated with dimethylamino-azobenzene (Töpfer's reagent).

A little of the unfiltered gastric contents is poured on one end of the two test papers. On the basis of the color obtained and of a comparison with table 1, a buffer solution is selected which will probably match the color obtained with the gastric contents; a drop is placed on the other end of the paper and the comparison is made. This is repeated if necessary. The p_H of the buffer solution indicates the p_H of the gastric contents.

EXAMINATION OF DUODENAL CONTENTS

It is obvious that the normal duodenal contents should be composed of a mixture of the pancreatic juice with the bile and discharged gastric contents. Since the pancreatic juice contains active amylolytic, proteolytic and lipolytic enzymes, one would expect to find all three enzymes in the duodenal contents. The activity of these enzymes appears to vary so widely in a variety of pathologic conditions as to furnish little diagnostic information. However, in pancreatic disease there may be a complete absence of proteolytic and amylolytic activity, thus furnishing information of definite diagnostic value. It is further of interest that with occlusion of the common bile duct, bile is absent from the duodenal contents.

CHEMICAL ANALYSIS OF BLOOD

The biochemical contributions made during the past fifteen years in the fields of nutrition and endocrinology (in particular the work on the vitamins and on the identification of the active principles of various ductless glands) have been very important and in some instances quite startling, but this work can hardly be compared in practical everyday usefulness with the development of methods of chemical blood analysis. Furthermore, numerous investigations of far reaching significance have been conducted with these methods. As a matter of fact, it would have been very unfortunate if simple methods of blood sugar and calcium estimation had not been available at the time of the discovery of insulin and the active principle of the parathyroid. Folin, Benedict and Van Slyke are the biochemists who have furnished us with the largest number of these delicate methods of blood analysis and have likewise made many important investigations with their aid.

TABLE 2.—*Clinically Significant Chemical Blood Constituents*

	Normal Range	Beginning Pathologic Range	Pathologic Range
Hemoglobin	14 - 17 Gm.	— 12	3 - 23
Nonprotein nitrogen	25 - 35 mg.	+ 35	20 - 400
Urea nitrogen	12 - 15 mg.	+ 20	5 - 350
Creatinine	1 - 2 mg.	+ 3.5	to 34
Uric acid	1 - 3.5 mg.	+ 4	to 27
Blood sugar	70 - 120 mg.	+150	40 - 1,300
Carbon dioxide capacity	50 - 70 per cent by vol.	— 45 + 70	5 - 130
Cholesterol	140 - 170 mg.	—130 +170	60 - 1,000
Calcium as calcium	9 - 11 mg.	— 8	3 - 20
Inorganic phosphorus as phosphorus:			
Adult	2.5 - 4 mg.	.....	2 - 40
Children	4 - 6 mg.	— 4	
Chlorides as sodium chloride			
Plasma	570 - 620 mg.	—500	300 - 850
Whole blood	450 - 520 mg.	—450	120 - 700
Icterus index (terms of 1:10,000 potassium dichromate)	4 - 6 mg.	+ 10	10 - 225

Normal and pathologic variations calculated per hundred cubic centimeters of blood. Below is indicated by a — sign and above by a + sign.

12. Shohl, A. T.: Determination of the Acidity of Gastric Contents: I. Determination and Significance of Acidity, Bull. Johns Hopkins Hosp. **31**: 152 (May) 1920. Shohl, A. T., and King, J. H.: II. The Colorimetric Determination of Free Hydrochloric Acid, ibid. **31**: 158 (May) 1920; III. Combined Acidity and Buffer Value, ibid. **31**: 162 (May) 1920.

13. Silverman, D. N., and Denis, Willey: A Compact Apparatus for the Clinical Determination of Gastric Acidity, J. A. M. A. **84**: 1495 (May 16) 1925.

14. The outfit may be obtained from the LaMotte Chemical Products Company, Baltimore.

A number of practical questions may arise in connection with the examination of blood for diagnostic purposes, such as: How should the specimen be taken? How may the results be recorded and reported? What information may one expect from such an examination? What analyses should be requested in having an examination made?

For the ordinary chemical examination of blood, from 10 to 20 cc. is required. (The new micro-Folin blood sugar method [15] requires only 0.1 cc. of finger blood.) If the blood is drawn into a glass syringe it should be immediately discharged into a 1 ounce bottle containing as the anticoagulant 2 or 3 drops of 20 per cent potassium oxalate (dried in the bottle). As a rule, the specimen should be taken in the morning before breakfast. In case the specimen is taken outside the hospital or laboratory, provision should be made for getting the specimen to the laboratory at once. When immediately refrigerated, blood may be kept suitable for some determinations for several days. If the blood has to be sent to a laboratory by mail some preservative must be employed, although none is entirely satisfactory. Sanders [16] has suggested the use of sodium fluoride and thymol as preservative and anticoagulant combined: 0.01 Gm. sodium fluoride and 0.001 Gm. thymol per cubic centimeter of blood.

For most of the chemical blood determinations whole blood is satisfactory, although in the case of the carbon dioxide determination plasma can best be employed. Calcium must be estimated in the serum, and for this reason it is well to employ serum for the inorganic phosphorus, since the two determinations are generally made on the same specimen.

The most significant chemical blood determinations are listed in table 2 with their normal and pathologic range and the level at which the observation may be regarded as abnormal.[17]

TECHNIC OF DETERMINING BLOOD CONSTITUENTS

Hemoglobin.—Although hemoglobin was the first chemical blood determination to come into routine clinical use, accurate results are seldom obtained for the reason that the methods most commonly used are crude or the standards inaccurate. With few exceptions these methods have taken 100 as the normal, despite the fact that the normals for men, women and children are different. To add to the confusion, different methods have taken different values for the 100. The values for 100 range from 13.77 Gm., used by Dare, to 17.2 Gm., employed by Sahli.[18] If one records the hemoglobin in grams per hundred cubic centimeters as with other blood determinations, these difficulties may be avoided.

The Newcomer glass disk, which can be obtained for any Duboscq type colorimeter, furnishes an excellent permanent standard to be used with the acid hematin method. At the outset the accuracy of the disk may be checked by the Van Slyke oxygen capacity (hemoglobin) method.

A hemoglobin estimation excellently supplements a chemical blood examination, and can be carried out so simply on a chemical blood specimen that it ought never to be omitted.

Nonprotein Nitrogen.—Since the urea nitrogen normally forms about half of the nonprotein nitrogen and with nitrogen retention the proportion increases, the two determinations tell essentially the same story. Of the two determinations I have always preferred the urea, but the nonprotein nitrogen is an excellent check on the blood urea, and is a quite necessary determination when there is an increase in some unknown form of nitrogen, as is the case apparently in eclampsia.

Urea Nitrogen.—Urea is the chief end-product of nitrogenous metabolism, and its excretion is one of the kidney's most important functions. Since the kidney normally eliminates urea very completely (down to from 12 to 15 mg. of urea nitrogen per hundred cubic centimeters of blood), its rise in the blood constitutes probably the most reliable measure of renal function we possess. Since urea is normally in large part exogenous in origin, improvement as a result of such therapeutic measures as diet, urinary drainage and rest is beautifully shown by the fall in the blood urea. The estimation of the blood urea is important in all forms of nephritis, and in intestinal obstruction. It is probably the most valuable preoperative prognostic test in conditions with urinary obstruction, such as prostatic obstruction, bladder tumor, and calculi in various parts of the urinary tract. Although it does not differentiate between the activity of the two kidneys, it does tell whether one of them is functioning satisfactorily.

Since urea is a very diffusible substance it is present in the saliva in nearly the same concentration as in the blood, and for this reason the salivary urea gives essentially the same information; but in the cases in which the urea is significant, other determinations may be required and blood may thus be necessary.

Creatinine.—The estimation of creatinine is indicated only in conditions of nitrogen retention in which the urea nitrogen is above 20 mg. Here the creatinine may furnish more reliable prognostic information than the blood urea. As was first pointed out by Myers and Lough,[19] creatinine figures of 5 mg. and above constitute a very unfavorable prognostic sign, unless, as rarely happens, the retention is due to some acute cause.

Uric Acid.—When properly used, the estimation of the blood uric acid may be the crucial test in the diagnosis of gout, as was first pointed out by Garrod [20] in 1848, who also showed that the concentration of uric acid was normal in rheumatism. These classic observations of Garrod on gout were confirmed by Folin and Denis [21] in 1913 with the aid of a new colorimetric method, which was one of the first of the many colorimetric blood methods to follow at the hands of Dr. Folin. In nephritis, uric acid appears to be retained earlier than urea, but it should be borne in mind that high values for uric acid are also found in starvation, eclampsia, arterial hypertension, lead poisoning and acute infections, especially pneumonia.

Blood Sugar.—The test for sugar apparently has come to be the most common chemical blood determination. It is also the determination which has received the most attention from an analytic point of view, chiefly for the reason that it has been felt that many of the methods give too high results. From a clinical

15. Folin, Otto: A New Blood Sugar Method, J. Biol. Chem. **77**: 421 (May) 1928.
16. Sanders, F. V.: The Preservation of Blood for Chemical Analysis, J. Biol. Chem. **58**: 1 (Nov.) 1923.
17. Further details are given in Myers, V. C.: Practical Chemical Analysis of Blood, ed. 2, St. Louis, C. V. Mosby Company, 1924.
18. Relative Values of Dare, Sahli, von Fleischel, Tallqvist and Oliver Hemoglobinometers, J. A. M. A. **87**: 1323 (Oct. 16) 1926. Standardizing Hemoglobinometers, J. A. M. A. **88**: 343 (Jan. 29) 1927.
19. Myers, V. C., and Lough, W. G.: The Creatinine of the Blood in Nephritis: Its Diagnostic Value, Arch. Int. Med. **16**: 536 (Oct.) 1915.
20. Garrod, A. B.: Observations on Certain Pathological Conditions of the Blood and Urine in Gout, Rheumatism and Bright's Disease, Med. Chir. Trans. **31**: 83, 1848.
21. Folin, Otto; and Denis, Willey: A New (Colorimetric) Method for the Determination of Uric Acid in Blood, J. Biol. Chem. **13**: 469, 1913; On the Uric Acid, Urea and Total Nonprotein Nitrogen in Blood, J. Biol. Chem. **14**: 29, 1913.

standpoint this is of little consequence, and almost any of the standard methods are adequate for clinical work, except possibly in the study of hypoglycemic blood. Benedict [22] has recently described a method which he believes gives very closely the true dextrose content of the blood, the figures averaging 22 mg. less than those obtained by the so commonly employed Folin-Wu method. Within a short time Folin [15] has published a unique micromethod which requires only 0.1 cc. of blood, the results averaging about 15 mg. less than by the Folin-Wu method.

If one employs finger (arterial) blood for sugar estimation it should be borne in mind that, although the figures agree with those obtained on venous blood in the fasting state, they are higher for finger blood after the intake of carbohydrate, except in severe untreated diabetes. Obviously a dextrose tolerance curve made on finger blood should have a different standard of comparison than one made on venous blood.

The estimation of blood sugar finds its chief use in the modern management of the diabetic patient. However, the determination is necessary for the diagnosis of renal diabetes, and moderate hyperglycemias are frequently found in nephritis, hyperthyroidism, pancreatic disease and some infections, while hypoglycemias are encountered in hypofunction of the thyroid, suprarenal and pituitary, and after too large an administration of insulin.

Carbon Dioxide Capacity.—One of the most valuable chemical blood determinations in both medical and surgical cases is the Van Slyke carbon dioxide capacity or combining power test, since with its aid one can measure the alkaline reserve and obtain a fair idea of the state of the acid-base balance. With figures for the carbon dioxide above 35 and below 70 per cent by volume, the carbon dioxide alone furnishes a quite reliable index of an acidosis or alkalosis, but with figures outside these limits, the acidosis or alkalosis is probably uncompensated; i. e., the reaction (p_H) of the blood is abnormal.

Determination of the carbon dioxide capacity should be a routine preoperative test on all patients who are seriously ill, since the carbon dioxide may fall from 10 to 20 per cent by volume as the result of an operation in which a general anesthetic (ether) is used. As insulin is a specific for diabetic coma, a surgical operation on a diabetic patient is no longer attended with unusual danger.

Low figures for the carbon dioxide capacity are encountered in diabetic coma, severe nephritis, the diarrheal acidosis of infancy, mercuric chloride poisoning and eclampsia, and in some instances the acidosis may be the actual cause of death. High figures for the carbon dioxide capacity (alkalosis) are found particularly in pyloric obstruction and excessive sodium bicarbonate administration.

Cholesterol.—Although the blood content of this interesting lipid varies in a number of pathologic conditions, most of these are of relatively little diagnostic value. However, the high concentrations found in nephrosis are almost pathognomonic. In diabetes the cholesterol content quite closely parallels the lipemia. The cholesterol is also increased in jaundice, pregnancy and in some, but not all, cases of cholelithiasis. It is decreased in pernicious anemia.

Calcium.—The serum calcium is lowered in infantile and parathyroid tetany, the tetany being a consequence of the reduction in the calcium. It is also lowered in the terminal stages of nephritis.

Inorganic Phosphorus.—The inorganic phosphorus of the blood is lowered in rickets, while cases of fractures with nonunion are apparently due to lack of mobilization of phosphorus and calcium. In the terminal stages of nephritis the inorganic phosphorus may be elevated to a marked degree, furnishing a very unfavorable prognosis.

Chlorides.—With the rise in the plasma bicarbonate which occurs in intestinal obstruction there is a corresponding fall in the plasma chloride. As pointed out by Haden and Orr,[23] the replacement of this plasma chloride is of great clinical value. The plasma chloride may also be much reduced in mercuric chloride poisoning and pneumonia. In nephrosis, despite the marked edema, the chloride concentration is essentially normal. However, high figures for the plasma chloride are encountered in some cases of nephritis and eclampsia.

Icterus Index.—The icterus index is a simple and relatively accurate method of measuring the bilirubin of the blood serum, if one excepts an occasional case of carotinemia. It is a very useful functional liver test in clinical work, since it helps in the diagnosis of cases of cholecystitis and cholelithiasis without clinical jaundice; is an aid in distinguishing between obstructive jaundice due to malignancy and catarrhal jaundice by showing whether the jaundice is increasing, diminishing or stationary; serves as an excellent guide to the toleration of the liver to arsenicals in the treatment of syphilis; is helpful in the diagnosis of cirrhosis and malignant metastases in the liver, and determines whether obstructive jaundice has been relieved by operation. It helps to differentiate primary and secondary anemia. The van den Bergh reaction gives added information in some cases, since it supposedly differentiates between the obstructive and nonobstructive forms of jaundice.

IMPORTANT CHEMICAL BLOOD OBSERVATIONS IN INDIVIDUAL CLINICAL CONDITIONS

Considering these determinations from the standpoint of some individual clinical conditions, it may be helpful to point out some of the outstanding chemical blood observations which are an aid in diagnosis, differential diagnosis and prognosis.

Renal Diabetes.—True renal diabetes is a condition of glycosuria in which the blood sugar is essentially normal. Obviously a diagnosis cannot be made without a knowledge of the blood sugar.

Diabetes.—In diabetes mellitus the blood sugar is obviously the determination of first interest, although in advanced cases the carbon dioxide capacity may assume greater importance. The excretion of sugar in the urine in the diabetic patient is merely a safety factor, and since the blood sugar threshold is elevated in diabetic cases of long standing, the urine sugar may be a very poor index of the hyperglycemia. Insulin therapy should be given on the basis of blood sugar estimations.

Gout.—Almost invariably the blood uric acid is increased in gout to from 5 to 9 mg. However, a knowledge of the urea nitrogen is necessary in order to rule out as far as possible a uric acid retention of purely nephritic origin. In the absence of renal involvement, the blood uric acid is not increased in arthritis of other than gouty origin.

22. Benedict, S. R.: The Determination of Blood Sugar: II. J. Biol. Chem. **76**: 457 (Feb.) 1928.

23. Haden, R. L., and Orr, T. G.: Use of Sodium Chloride in Treatment of Intestinal Obstruction, J. A. M. A. **82**: 1515 (May 10) 1924. Orr, T. G., and Haden, R. L.: Reducing the Surgical Risk in Some Gastro-Intestinal Conditions, J. A. M. A. **85**: 813 (Sept. 12) 1925.

Nephritis.—Figures for urea nitrogen remaining above 20 mg. are definite evidence of impaired renal function. It may be markedly elevated in acute nephritis, and reach 350 mg. in chronic forms of the disease. When the urea nitrogen rises above 20 mg. the creatinine should always be estimated. Creatinine figures above 5 mg. give a very bad prognosis.[17] In most terminal cases there is acidosis and hence a low carbon dioxide capacity.

Nephrosis.—In nephrosis, nitrogen retention as a rule is comparatively slight, but the hypercholesterolemia is quite characteristic and therefore of considerable diagnostic value.

Double Polycystic Kidney.—In double polycystic kidney the chemical blood picture is ultimately one of pronounced nitrogen retention.

Mercuric Chloride Poisoning.—Poisoning with mercuric chloride frequently results in complete suppression of urine. This obviously brings about an immediate and rapid rise of the nitrogenous waste products in the blood. For this reason a high creatinine does not furnish the same grave prognosis that it does in chronic nephritis in which the accumulation has been slow; still a knowledge of these blood changes will generally forecast the ultimate outcome.

Urologic Conditions.—Preoperative information by means of chemical examination of the blood should be secured in all surgical conditions of the kidneys, bladder or prostate. The information is of more value in prostatic than in other urologic conditions. The blood urea in particular furnishes an excellent preoperative prognosis as far as the kidneys are concerned.[24] With urea nitrogen figures of 20 mg. or less, the renal factor can quite safely be disregarded. With urea retention, however, the creatinine or carbon dioxide may be more significant. Patients presenting urea nitrogen figures over 25 mg. should be operated on with caution, and best after a period of preliminary treatment directed to relieve the nitrogen retention. This applies particularly to any lesion inhibiting the output of urine.

Eclampsia.—In contradistinction to true nephritis the urea nitrogen in eclampsia is normal or decreased, although the nonprotein nitrogen may be moderately elevated. Along with the reduction in the blood urea there is generally a considerable elevation in the blood uric acid, both changes possibly depending on the liver. In severe cases of eclampsia, the carbon dioxide may be considerably reduced. Toxemias do occur in which nitrogen retention exists, but it seems probable that in most cases this is due to a true nephritis.

It is well to bear in mind that in normal pregnancy the nonprotein and urea nitrogen yield low normal values, and that the moderately reduced carbon dioxide in the blood is the result of an uncompensated alkalosis, due to increased ventilation, and not due to an acidosis.

Intestinal Obstruction.—Cases of intestinal obstruction show nitrogen retention, the degree of retention being in general proportional to the severity of the condition. It may be quite as marked as that found in nephritis. Cases of peritonitis likewise show nitrogen retention. With intestinal obstruction high up a pronounced alkalosis may develop, due probably in part to the loss of hydrochloric acid by vomiting. Here both the carbon dioxide and the p_H may be markedly elevated, and the chlorides reduced. The intravenous administration of sodium chloride has been shown by Haden and Orr [23] to be of marked benefit in cases of intestinal obstruction, greatly improving the prognosis of operative intervention.

Administration of Sodium Bicarbonate.—The administration of sodium bicarbonate to patients with peptic ulcer in the Sippy treatment not infrequently leads to a pronounced alkalosis, which can be proved positively only by the estimation of the carbon dioxide content and the p_H.

Malignant Conditions.—Malignant growths in the terminal stages often show considerable nitrogen retention and acidosis.

Primary and Secondary Anemia.—The icterus index is of considerable help in differentiating hemolytic and nonhemolytic anemias, since it is elevated in the former but not in the latter.

Tetany (Infantile, Parathyroid).—Since infantile tetany and tetany due to parathyroid deficiency are a result of a reduction in the blood calcium below a level of 7.5 mg., information regarding the blood calcium is necessary for a correct diagnosis and intelligent treatment.

Rickets.—In active rickets the inorganic phosphorus of the serum appears to be regularly reduced, sometimes to an extreme degree. In some cases there may be a reduction in the calcium.

24. Squier, J. B.; Bandler, C. G., and Myers, V. C.: Significance of Chemical Blood Findings in Urologic Conditions, J. A. M. A. **79**: 1384 (Oct. 21) 1922.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, SECRETARY.

IOSALINE NOT ACCEPTABLE FOR N. N. R.

Iosaline, according to information supplied by the Iosaline Co., Inc., Washington, D. C., is a mixture containing potassium iodide, equivalent to 5 per cent of iodine; menthol, 1 per cent; methyl salicylate, 12 per cent; alcohol, 70 per cent. According to the label, Iosaline is a "non-staining gelatinoid of combined iodine with menthol and methyl-salicylate." The label also declares the presence of 70 per cent of alcohol and 5 per cent of iodine, but the form in which the iodine is present is not divulged, nor the amount of menthol and methyl salicylate. A similarly indefinite statement appears in the advertising: the amount of menthol and methyl salicylate is not declared nor the amount or the form of iodine.

Although it is well known that potassium iodide is not absorbed to any extent when applied to the skin, the advertising claims that the iodine of Iosaline is readily absorbed; thus it is stated that the "prompt absorbability" of Iosaline is one of the "unique advantages" of the mixture and it is suggested that the mixture may be prescribed "wherever Iodine and the Salicylates, alone or in combination, would be used locally."

In 1913 (THE JOURNAL, March 15, 1913, p. 849), Iosaline was found unacceptable for New and Nonofficial Remedies because of the misleading and unwarranted claims that were made for it. At that time the A. M. A. Chemical Laboratory reported that Iosaline appeared to be a solidified watery alcoholic solution of soap, containing potassium iodide, menthol and methyl salicylate, and that physiologic tests carried out by rubbing the preparation on the skin and afterward testing the saliva and the urine for iodide indicated that none of the potassium iodide is absorbed.

On the basis of the available information, the Council affirmed the rejection of "Iosaline," holding the preparation unacceptable for New and Nonofficial Remedies because the quantitative composition is not declared on the label and in the advertising; because its name is not descriptive of its composition, and because it is sold with unwarranted therapeutic claims.

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SATURDAY, JULY 21, 1928

THE IMPLICATIONS OF RACE BETTERMENT

"Are the ablest, the strongest, the wisest men merely gravediggers in disguise?" This is the pertinent question that Professor Carlson[1] of the University of Chicago raised at the Third Race Betterment Conference in Battle Creek, Mich., a few weeks ago. Improvement of the race in a permanent way implies a favorable influence on the germ plasm. Without this result the probability of securing anything more than transitory gains in the physiologic life is slight. When, accordingly, we consider more closely what factors present-day modes of existence are contributing to human development and progress it is not easy to single out many that give any assurance of permanent gain in the life of the coming generations. The present state of development of man and his fellow animals, Carlson points out, has come about through the forces of heredity and environment, practically without an iota of conscious direction based on accumulated experience. The time during which we have had even an approximate understanding of our physiologic processes and the factors that favor or impede them is so short that it may virtually be ignored in the total time span that man and other animals have existed on the earth. One cannot gainsay that the slow process of evolution may not produce advantages and tend to produce a "better man," though the desired attributes of the latter may be vigorously debated. But Carlson ventures the reminder that the only clear instances we have of rapid modification of the germ plasm by experimental (drugs) or environmental means seem to be injurious or destructive.

The attempts at betterment of our foods have, indeed, removed many temporary menaces to health; incidentally, they have brought new ones in the form of deficiency disorders and altered nutrition. Cooking and food preservation have certain obvious advantages. Milling and other manipulations that tend toward greater chemical purity in foods are by no means necessarily conducive to physiologic well being. The machine-ridden world of today promotes physical inactivity because it removes part of the urge to work in order to live. Yet Carlson asks, quite pertinently, whether either physical inactivity on the one hand or overexertion on the other actually affects the germ plasm. The modern methods of housing with their obstruction to sunlight and the circulation of pure air can scarcely be expected to promote well being, while the newer factors of pollution of air and water by modern cities and modern industry are on the increase, as we are reminded, and the probable danger from these conditions seems only partly appreciated by society. The metallic poisons that enter the human body with increasing readiness tend, if anything, to harm the germ plasm in the long run.

The greater continuity and persistence of the sex urge in man than in most of the other animals, Carlson avers, may be related to the greater brain development (memory, imagination). If this is correct, he adds, we have here an instance of uncorrelated development; that is, development of one organ or process leading to discoordination or injury of another. It is an achievement to produce better individuals. The reconstruction or modification of the race presents a far more difficult problem. We can accordingly understand Carlson's ominous conclusion: "The germ plasm can be injured; some phases of the present man-made environment seem to enhance such injury." It is highly desirable to approach the question of real race betterment with an open mind, a clear vision—with an objectivity unbiased by subjective hopes and humanistic longings.

1. Carlson, A. J.: The Physiologic Life, Science **67**: 355 (April 6) 1928.

ALCOHOL IN THE BODY

Despite the existence of the Volstead Act, the problem of the relation of alcohol to human welfare has not yet been eliminated from the need of medical consideration. The discussion here does not concern the much debated question as to whether alcohol, in being burned up in the body as it undoubtedly can be, functions as a true food; nor are we concerned in the present instance with alleged effects of the substance on human efficiency, health or longevity. The discussions of the possible interrelations of drunkenness and crime belong in the field of sociology. Strangely enough, there has until quite recently been a paucity of dependable data relating to the actual fate of alcohol in the body—such facts as can be applied to the interpretation of diagnostic situations in which ethyl alcohol may play some part.

The extreme solubility of alcohol in water and its ready diffusion help to explain the ease with which the substance is absorbed. According to a carefully edited official British report,[1] analyses of the contents of the stomach and intestine, made at different intervals after a dose of alcohol has been swallowed, show that about

1. Alcohol: Its Action on the Human Organism, London, H. M. Stationery Office, 1918.

one fifth of it is absorbed from the stomach. In the uppermost section of the small intestine one tenth is absorbed, but the main absorption, accounting for half of the quantity taken, occurs in the middle part of the small intestine, the remaining fifth being absorbed in the third and last section. By the time the alimentary contents reach the large intestine, all the alcohol has been taken up from them into the blood. The actual speed of absorption seems to vary with a number of conditions, such as the form in which the alcohol is taken, the extent to which it is diluted, and the time in relation to meals; but the interaction of the different factors is evidentally complicated, and there is no evidence so clear as to warrant a final statement concerning the effect of any of these factors. A variable but usually small proportion of alcohol escapes unchanged in the breath and urine. The rest disappears completely in about twenty-four hours after it has been swallowed.

As alcohol is ordinarily produced by living organisms, notably yeast cells, the question is often asked whether the compound may not arise endogenously in the human organism and thus occur independently of any intake of the substance. A positive answer need not be assumed to make the "natural" production of alcohol in the body serve as an argument for its indispensability to human well being. A growing number of "foreign" substances are known to occur in minute quantities in the organism. Traces of zinc and copper and doubtless other metals are commonly found. Probably they are for the most part adventitious, though the recent observations of Wisconsin biochemists regarding the beneficial rôle of traces of copper in the hematopoietic utilization of iron in nutritional anemias, as well as the familiar experiences of what minute amounts of iodine represent in the human economy, warn against any final pronouncements.

For alcohol there is growing evidence that it does occur in minute traces in the body. It can be identified alike in the blood and in all the tissues examined. This universal distribution is to be expected in view of the ready diffusibility of alcohol. According to the latest analyses of McNally and Embree[2] of Chicago, the human body normally contains about 0.003 per cent of alcohol. When the substance is taken into the body it is rapidly absorbed and passes to all fluids and tissues of the body in approximately equal amount, so that within an hour and a half it is practically all absorbed and an analysis of the blood, urine, or tissue will give a fairly accurate measure of the alcohol present. According to McNally and Embree, a chemical analysis of fluids or tissue of the body showing alcohol to be present in excess of 0.01 per cent indicates that alcohol has been taken recently. If such analysis is made from two to six hours after the taking of alcohol and the result is multiplied by the body weight, it will give approximately the total quantity of alcohol taken. The presence of from 0.4 to 0.5 per cent of alcohol represents a condition of drunkenness, and for a man of average weight means that about 300 Gm. of alcohol has been taken. This amount would be present in about a pint of ordinary whisky. Twice this amount, or from 0.8 to 1 per cent, of alcohol in the body will cause death. These observations are in essential accord with the data of earlier investigators and thus furnish a quantitative basis for medicolegal decisions in place of haphazard diagnoses of suspected alcoholism.

2. McNally, W. D., and Embree, H. C.: Alcohol in the Human Body, Arch. Path. **5**: 607 (April) 1928.

PRESENT-DAY ASPECTS OF ACUTE APPENDICITIS

Less than half a century has elapsed since Reginald Fitz of Boston introduced the term appendicitis into medical literature in 1886. During this interval the public has come to regard the malady as the commonest of the problems presented to the surgeon for the application of his special skill. The main symptoms of appendicitis are probably recognized by the layman more definitely than is the case with most serious bodily ills that directly attract his attention. Hence the condition is the subject of frequent discussion by untutored persons who realize that appendicitis was formerly a common cause of death, whereas today an untoward outcome can presumably be averted by surgical intervention. One reads a distinguished surgeon's dictum that "there would be no deaths from appendicitis if every case commencing with acute pain, and developing tenderness and rigidity of the abdomen and quickening of the pulse, were operated upon within twelve hours."[1] Perhaps the growing sense of safety in relation to appendicitis requires some restraint even in these days of augmented professional skill. Whether the disease is on the increase, as some statistics indicate, may be debated. Dean Lewis[2] has expressed his skepticism with the added comment that the diagnosis is made more frequently and with greater certainty than formerly, and, as the number of cases reported in vital statistics increases, the number of lesions of the peritoneum and liver decreases. Nevertheless, as appendicitis is more common among highly civilized than among primitive people, among dwellers in cities than among those living in country districts, it is likely to engross medical attention in increasing rather than lessened measure.

The seriousness of appendicitis as a professional problem is indicated by recently collected figures from the Bureau of Vital Statistics which show that about 25,000 people die annually in the United States from the acute form. Quain and Waldschmidt[3] of Bismarck, N. D., interpret this to signify that there has been an increase of 30 per cent in the mortality of this disease

1. Haggard, H. W.: The Science of Health and Disease, New York, Harper & Brothers, 1927, p. 47.
2. Lewis, Dean, in Cecil's Textbook of Medicine, Philadelphia, W. B. Saunders Company, 1927.
3. Quain, E. P., and Waldschmidt, R. H.: Acute Appendicitis, with a Report of One Thousand Consecutive Cases, Arch. Surg. **16**: 868 (April) 1928.

within the past decade and that as many people die from appendicitis each year as from ectopic pregnancy, pyosalpinx, gallstones and pancreatic, splenic and thyroid gland disease combined. These figures, even if only approximately correct, they add, suggest that no member of the surgical profession has a right to rest on the laurels of his record in cases of appendicitis, no matter what they may be, but rather that he should be urged to a more intensive study of the whole problem of acute appendicitis.

This is not the appropriate place for discussing the numerous details of technic that the experience of accomplished surgeons dictates. Even among the most skilled, personal judgment in moments of stress has not yet been superseded by any unanimity of opinion crystallized in recommendations for a standardized procedure. However, it seems worth while to quote the urgent warning of the North Dakota surgeons that, in spite of much effort to instruct both the public and physicians about the danger of giving laxatives haphazardly in acute abdominal lesions, castor oil, magnesium sulphate and their equivalents continue to aggravate and complicate acute appendicitis. In the great majority of all the severe cases Quain and Waldschmidt have seen, including practically all the patients who had early and hopeless peritonitis, a cathartic had been given soon after the onset of the disease. They add that one may forgive an overzealous mother who tries to do the best she can, but it is most distressing to see medical men of modern education still addicted to the medieval and pernicious habit of prescribing cathartics when they are as plainly contraindicated as they are in acute appendicitis.

Current Comment

AMMONIA FORMATION AND THE LIVER

The origin of the nitrogenous waste products of the body and their fate in the organism are inevitably topics of interest to students of physiology and medicine. It is a hundred years since Wöhler's classic synthesis of urea in the chemical laboratory was accomplished, yet only a short time ago the seat of origin of this protein catabolite was being debated. Not until Bollman, Mann, and Magath [1] of the Mayo Foundation succeeded in keeping animals alive for a time after extirpation of the liver was it conclusively demonstrated that the liver is responsible for the biochemical reactions resulting in the final genesis of urea. In the absence of the liver, the urea content of the blood and tissues decreases markedly. The content of uric acid, on the other hand, becomes augmented—a clear indication that the purine derivative is formed outside the hepatic cells. Recently Mann and Bollman [2] have sought the place of origin of ammonia by observations following hepatectomy. Apparently the amount excreted is not affected by this operation but is related to the acid-base equilibrium of the animal. The injection of amino-acids does not increase the ammonia content of the blood, tissues or urine of the dehepatized animal, even at a time when the injection of urea would increase the excretion of ammonia. It is reported that ammonia or ammonium salts injected after hepatectomy may be quantitatively recovered as ammonia in the blood, tissues and urine several hours afterward. Since ammonia is normally converted with rapidity to urea, Mann and Bollman argue that this process is not accomplished in the absence of the liver. Hence it appears to them that the liver is necessary for the deaminization of amino-acids and for the formation of urea, but that the liver is not concerned with the formation of ammonia from urea.

1. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Am. J. Physiol. **69:** 371 (July) 1924.
2. Mann, F. C., and Bollman, J. L.: Am. J. Physiol. **85:** 390 (June) 1928.

EARLY DIAGNOSIS IN MEASLES

Nearly eight years ago, Brownlee,[1] observing that measles mortality is largely confined to the early age groups, advocated a concentration of effort toward the protection of young children. The idea was revived by Godfrey [2] in this country in 1926. In May of last year, W. S. C. Copeman [3] presented to the Royal Society of Medicine a method of securing this protection by the careful utilization of convalescent serum in patients under 3 years of age, apparently quite unaware that, even as he read his paper, a successful demonstration of something like his scheme was in actual progress in the city of Syracuse, N. Y. Both plans stressed the importance of educational publicity and of conserving the serum for children under 3 years of age. In the Syracuse work Drs. Ruhland and Silverman [4] made an additional point of some importance in stressing the value of early diagnosis. When the serum is given during the first four days after exposure, the proportion of patients who are completely protected is greater than when the serum is given in the second four days. True, the difference is not great and if serum is given in the first week the measles attack will, in any case, be "modified." True, also, some authorities believe that it is desirable to modify the attack rather than to prevent it altogether, so as to confer on the patient a more or less lasting immunity. But it must not be forgotten that, as the delay in giving serum increases, so also must the dose increase. The remedy is so precious that this point cannot be overlooked. Early diagnosis means early attention for the patient as well as for the contacts, and this must materially affect the prognosis. As a result of their publicity campaign, calling attention to the possible significance of malaise, slight fever and catarrhal symptoms, Ruhland and Silverman were able to show that in nearly 90 per cent of cases a physician was called on or before the fourth day of illness. Obviously, if physicians are

1. Brownlee, J.: Public Health Administration in Epidemics of Measles, Brit. M. J. **1:** 534 (April 17) 1920.
2. Godfrey, E. S.: Administrative Control of Measles, Am. J. Pub. Health **16:** 571 (June) 1926.
3. Copeman, W. S. C.: The Prophylaxis of Measles with a Suggested Scheme for Dealing with Epidemics, Proc. Roy. Soc. Med. **20:** 79 (Aug.) 1927.
4. Ruhland, G. C., and Silverman, A. C.: What Can We Do About Measles? Am. J. Pub. Health **18:** 131 (Feb.) 1928.

to see patients so frequently in the preeruptive stage of the disease, early specific signs become of increasing importance. The appearance of a "measles line" (a line of congestion across the conjunctiva of the lower lid) shortly after the onset of fever has been described by Stimson.[5] Still more recently, Wadsworth and Misenheimer[6] have reported that, by the use of ultraviolet rays, the rash itself may be detected for from thirty-three to seventy-six hours before it becomes visible by ordinary light. It may be hoped that, as the attention of the profession is concentrated more and more on the preeruptive stage, still further aids to confident diagnosis will be forthcoming.

THE WASHING OF TIN CANS

Any public health consideration of the canning industry brings to mind the excellent results that have attended the efforts of the Botulism Commission[7] in the control of this type of food poisoning.[8] One of the important factors of possible bacterial contamination of tin cans and glass jars, and therefore, potentially, of our food supply, has been revealed by Fellers.[9] Laboratory examination of unused cans and jars in New England canneries showed that bacterial counts as high as 162,000 per can were frequent; freshly manufactured cans harbored fewer organisms. Moreover, Fellers directed special attention to the grave danger of introducing such organisms as *B. botulinus* in preserved food by the use of unwashed containers. Such a possibility is real, for the records of the Hooper Foundation for Medical Research of the University of California indicate an instance of the isolation from an unwashed can of *B. botulinus* with the production of type A toxin. Likewise, these considerably higher bacterial counts have been obtained from the unwashed can than are quoted by Fellers. It is a generally accepted fact that the efficiency of sterilizing time and temperatures for preserved foods is represented by the bacterial content subsequent to retorting or sterilization. Of late years, the sterilizing times and temperature have been based on the result of carefully acquired, time consuming and checked data of the laboratory and the cannery. Therefore, it is unreasonable to expect that the heat processes should bear the brunt of unnecessarily added bacteria from the unwashed can. It is also of direct interest to the packer because of débris and other foreign material alleged to be present, as demonstrated by THE JOURNAL in a recent analysis of outbreaks of food poisoning.[10] The fish canning industry of the Pacific Coast, at the instigation of the Inspection Service of the California State Board of Health, has recently gone on record advocating the use only of washed cans as an additional sanitary measure and safeguard to our food supply.

5. Stimson, P. M.: The Earlier Diagnosis of Measles, J. A. M. A. **90**: 660 (March 3) 1928.
6. Wadsworth, W. H., and Misenheimer, E. A.: An Aid to the Earlier Diagnosis of Measles and Possibly Various Other Eruptive Diseases, J. A. M. A. **90**: 1443 (May 5) 1928.
7. Geiger, J. C.; Dickson, E. C., and Meyer, K. F.: Bull. 127, Hyg. Lab., U. S. P. H. S., 1922.
8. The Frequency of Botulism, J. A. M. A. **90**: 764, 770 (March 10) 1928.
9. Fellers, C. R.: Am. J. Pub. Health **18**: 763 (June) 1928.
10. Food Poisoning, J. A. M. A. **90**: 459 (Feb. 11) 1928.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Francis Walter Carruthers, Little Rock, won the loving cup for 1928 at the golf tournament held during the annual meeting of the state medical society at El Dorado, in May.——Dr. Frank A. Norwood, Ashdown, has accepted a position at U. S. Marine Hospital number 43, Ellis Island, N. Y.

CALIFORNIA

Personal.—Dr. William C. Hassler, health officer of San Francisco, was elected president of the newly organized Western Branch of the American Public Health Association, formed, according to the Bulletin of the San Francisco County Medical Society, at the annual meeting of the National Tuberculosis Association in Portland.——Dr. William Wallace Dodge has been appointed chief police surgeon of Los Angeles to succeed the late Dr. Edwin G. Goodrich.

Another Change Noticeable in Girls.—Edna W. Bailey, Ph.D., in addressing the annual meeting of the National Tuberculosis Association, Portland, Ore., in June, stated that a health record had been carefully kept, under the supervision of the departments of hygiene and education, of 700 girls in the University High School at the University of California. The record of emergency treatment given to the girls over a period of six months showed that there were only nine cases of fainting, while there were 100 sprained ankles and wrists and 225 cuts and abrasions. Dr. Bailey said that at no other age are there so many falls, bruises and sprains as during high school years. The school physician spent about as much time caring for the minor injuries of girls as he did in caring for the boys.

Mussel Poisoning.—The eating of the large mussel, *Mytilus californianus*, which had been freshly gathered at fourteen different beds on the coast near San Francisco in July last year, seriously poisoned 102 people, of whom six died. Karl F. Meyer, Ph.D., director, Hooper Foundation for Medical Research, and consulting bacteriologist to the state department of health, again calls attention to the danger in the use of mussels on the California coast during the summer months. Cases of poisoning have occurred in two successive years near Santa Cruz. The origin of the poison has not been established. Investigations are in progress. Persons who notice numbness around the lips and a prickly feeling in the finger tips or toes thirty minutes or longer after eating mussels should empty the stomach by an emetic, take a brisk laxative, call a physician at once and report the case to the state department of health, San Francisco, telephone, Park 8700.

CONNECTICUT

State Medical Election.—At the annual meeting of the Connecticut State Medical Society, May 23-24, Bridgeport, Dr. Earle Terry Smith, Hartford, Conn., was elected president, and Dr. Charles W. Comfort, Jr., New Haven, was reelected secretary. The next session will be at Waterbury, May 22-23, 1929.

Connecticut's Fourth Clinical Congress.—The Connecticut State Medical Society will hold its fourth annual clinical congress at New Haven, September 18-20. Last year about 400 physicians from nine states attended the congress. The program will cover a wide variety of subjects. There will be about twenty visiting speakers, among them Drs. Fred Wise, New York; John A. Kolmer, Philadelphia; James J. Walsh, New York; Walter C. Alvarez, Rochester, Minn.; Hugh H. Young, Baltimore; Robert B. Osgood, Boston; Arthur J. Cramp, Chicago; John Homans, Boston; George S. Derby, Boston; Walter A. Bastedo, New York, and Byron P. Stookey, New York. The registration fee is $5, but medical students and hospital interns are admitted without payment of any fee. All physicians are invited. Registration cards may be obtained by applying to Dr. Creighton Barker, vice chairman of the committee on enrolment, 129 Whitney Avenue, New Haven. The president of the congress is Dr. David Chester Brown, who is also a member of the board of trustees of the American Medical Association.

DISTRICT OF COLUMBIA

Personal.—Dr. Tom A. Williams, Washington, lectured on "Mental Hygiene" at Duke University, Durham, N. C., for several weeks, beginning June 12.——Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, has been elected a corresponding member of the Royal Society of Medicine of Great Britain.——Dr. Aleš Hrdlička of the U. S. National Museum has been appointed by the secretary of state on the cooperating committee to the Seventh American Scientific Congress to be held at San José, Costa Rica, in 1929.

Chiropractor Gets Thirty Years—The Patient Died.—Louis W. Hoffman, chiropractor and physical therapeutist, Washington, D. C., pleaded guilty, June 27, to a charge of second-degree murder in connection with the death of 24 year old Eleanor W. Lehman, in his office, March 3, and was sentenced by Justice Siddons to serve thirty years in prison. Miss Lehman died of a broken neck after, it was charged, Hoffman had performed on her an illegal operation. The indictment charged that Hoffman deliberately broke Miss Lehman's neck to cover up the alleged illegal operation. Hoffman, in spite of his plea of guilty, insisted that he had no intention of deliberately killing the woman. He told the coroner's jury in March that he gave her the customary treatment used by chiropractors in cases of severe headache (THE JOURNAL, March 17, p. 860).

GEORGIA

Personal.—Dr. Thomas C. Davison, Atlanta, has been elected president of the Medical Alumni of Emory University.——Dr. James F. Pitman, Atlanta, has been placed in charge of the roentgen-ray department of the John D. Archbold Hospital, Thomasville.——The Fulton County Medical Society was addressed, July 19, by Dr. Samuel J. Sinkoe, Atlanta, on "Importance of Urologic Investigation in Abdominal Pain."

Another Package Library.—The Medical Association of Georgia has arranged for its members a package library service at the A. W. Calhoun Medical Library, Emory University, Atlanta, whereby they may obtain for 25 cents, to cover the cost of mailing, material on various subjects. Requests should be made to the secretary of the association, Dr. Allen H. Bunce, or the librarian of the A. W. Calhoun Medical Library, Emory University, Atlanta.

ILLINOIS

Society News.—At the annual picnic of the Peoria County Medical Society, June 29, Dr. Charles H. Mayo, Rochester, Minn., was scheduled to speak on "Relation of the Sympathetic Nervous System to Disease," and Dr. Charles P. Emerson, Indianapolis, on "Chronic Arthritis."——The DeWitt County Medical Society met, June 22, at Farmer City; Drs. Don Deal and Samuel E. Munson, both of Springfield, spoke on "The Acute Abdomen" and "Cardiac Lesions," respectively.——During May, twenty-two persons at Streeter contracted smallpox and six patients were still in quarantine, June 5.——The Monroe and Randolph County Medical societies held a joint meeting at Paris, Mo., July 10; Dr. Harold Swanberg, Quincy, spoke on "Practical Uses of Radium in Uterine Hemorrhage."——Dr. R. A. Hanna, Peoria, was elected president of the Alumni Association of Keokuk Medical College at the reunion in Keokuk, Iowa, June 8.——Dr. Harold D. Palmer, Iowa City, Iowa, has been placed in charge of the laboratory at the Rockford Hospital, Rockford.

Chicago

Roentgenologist Appointed for Cook County Hospital.—The county board is reported to have appointed Dr. Chester H. Warfield, Ann Arbor, Mich., as director of the roentgen-ray unit at Cook County Hospital, which has just been remodeled at an expenditure of about $25,000. Five rooms have been added for examinations and an additional room set aside for roentgen-ray therapy. The unit is said to have a capacity of 150 patients in twenty-four hours.

Personal.—Dr. Ludvig Hektoen was guest of honor at the annual banquet of the Pacific Northwest Medical Association, Tacoma, July 5; the subject of his address was "How Medical Knowledge Grows."——Smith College awarded the honorary degree of doctor of science, June 18, to Edna L. Foley, superintendent, Visiting Nurse Association of Chicago, in recognition of her work in the field of public nursing; only a few others, among whom are Madam Curie and Dr. Alice Hamilton, have been thus honored by Smith College.

Change of Date of Picnic.—The outing of the North Side and Aux Plaines branches of the Chicago Medical Society and the Chicago Laryngological and Otological Society at Lake Maxinkuckee, announced in THE JOURNAL last week, has been changed to July 31 instead of August 7. The program indicates that the day will be filled with entertainment for every one, and that those who enjoy contests will find an opportunity to show their skill. There will be a clinic "for surgeons only" to locate the vermiform appendix; an orthopedic clinic "for bone setters only"; a hurry-up call for family practitioners; movies and boating; an exhibition by the Culver Military Academy cadets, and a short address by Admiral Hugh Rodman, who commanded the U. S. battle squadron with the British Grand Fleet during the World War. All members of the Chicago Medical Society and their families are cordially invited. The special train will be parked in the academy grounds during the stay.

IOWA

Hospital News.—Osceola Hospital, Sibley, recently opened a new wing which doubles the capacity of the hospital and provides a roentgen-ray and physical therapy laboratory, a refrigerating system and other conveniences.

Personal.—Dr. Frank M. Fuller, Keokuk, was reappointed a member of the state board of medical examiners, July 1, for the third term.——Dr. John D. Cantwell, Davenport, has been elected president of the newly organized state association of county coroners.

County Society Discontinues Free Clinic.—The free medical clinic in Sioux City, conducted for the last ten years under the supervision of the Woodbury County Medical Society, was discontinued by unanimous vote of the society at a special meeting, May 24. The society, whose members have donated their services to the clinic, felt that too many patients who did not need charity were being treated or, in other words, that there was insufficient investigation by the lay persons in charge of patients who came to the clinic for treatment. A local newspaper reported that from the clinic's records, it appears that about 4 per cent of the population of Sioux City is indigent, whereas in the average city only about 1 per cent of the population is so destitute that it requires free medical treatment. Indigent sick persons in Sioux City now will be cared for by the county.

KANSAS

Dr. Skoog Resigns.—The chancellor of the University of Kansas has accepted the resignation of Dr. Andrew L. Skoog, Kansas City, as head of the department of neuropsychiatry.

Personal.—Dr. Clinton K. Smith, Kansas City, addressed the Crawford County Medical Society, recently, at Pittsburg, on "Urologic Problems in Children."——Dr. John A. Dillon, Larned, has been appointed superintendent of the Larned State Hospital, succeeding the late Dr. William Stout.

MAINE

Dr. Towne Appointed to State Board.—Governor Brewster has appointed Dr. John G. Towne, Waterville, a member of the state board of registration of medicine, succeeding the late Dr. Albert H. Sturtevant of Augusta for the unexpired term ending July 1, 1931.

Licenses Revoked.—The state board of registration of medicine, Portland, reports that the license of Dr. Robert L. Maybury, Saco, was revoked, July 2, after a hearing; Dr. Maybury was recently convicted of manslaughter following the death of a girl through abortion. The license of Dr. Edward L. Sollima, Portland, was revoked, July 2, because he had obtained it through presentation of fraudulent credentials and false affidavits.

Society News.—At the annual meeting of the Aroostook County Medical Society, Houlton, June 12, Dr. Richard B. Cattell, Boston, gave an illustrated lecture on "Relation of Iodine to Goiter." The other speakers were Drs. Charles E. Sunder, Woodstock, N. B., Leon G. Banton, Island Falls, Wiley E. Sincock, Caribou, and Penry L. B. Ebbett, Houlton, who gave the president's address.——The Androscoggin County medical and dental societies held a joint meeting, May 25, at Lewiston; George H. Wright, D.M.D., professor of oral medicine, Medical School of Harvard University, Boston, spoke on "Medicodental Aspect of Focal Infection."

MASSACHUSETTS

Sedgwick Memorial Lecture at Woods Hole.—The seventh William Thompson Sedgwick Memorial Lecture will be given in the auditorium of the Marine Biological Laboratory, Woods Hole, July 27, at 8 o'clock, by Edwin Grant Conklin, Ph.D., professor of biology, Princeton University, on "Problems of Development." The public is invited. The lectureship was established to commemorate the services of William Thompson Sedgwick to the cause of biology and public health, and is given

annually under the auspices of the department of biology of the Massachusetts Institute of Technology. The committee in charge comprises six members of the faculty of as many universities.

Committee to Investigate Workmen's Compensation Act.—At the annual meeting, June 5, of the council of the Massachusetts Medical Society, there was evident a strong feeling that hospitals caring for patients under the Workmen's Compensation Act should be paid at a cost rate of maintenance, and that staff physicians who care for these patients should be allowed to charge for their services. As the Industrial Accident Board recently decided against these principles, the council voted that a committee be created to investigate the Workmen's Compensation Act, consisting of one member from each district medical society and the assistant to the president of the state society. The committee was authorized to expend such money as may be required to obtain the legal advice needed.

Surgeon's Fee Excessive—Board Suspends Him.—The state supreme judicial court, June 27, denied the petition of a Boston surgeon for a reversal of the decree of the state board of registration in medicine which suspended his registration for one month on account of "gross misconduct." The surgeon operated on a patient for carcinoma of the larynx and charged a fee of $1,000. The entire estate of the patient, who died of surgical shock, was $3,250. The court considered that the fee was excessive and that a fee of $300 would be just. The board of medical examiners held that the patient did not receive proper consideration before operation and that the lack of preliminary operative care was probably more important evidence against the surgeon than the size of the fee. In his appeal to the court, the surgeon held that the evidence did not warrant a finding that the fixing of the fee of $1,000 was gross misconduct within the meaning of the law, and that the evidence did not warrant a finding of any act of personal wrongdoing.

Six Hundred and Fifty Cases of Septic Sore Throat.—The epidemic of septic sore throat in the city of Lee amounted to more than 650 cases and twenty-eight deaths, July 15. The city's population is about 4,000. Although five new cases were reported the previous day, the state health commissioner, Dr. George H. Bigelow, considered the situation much improved. The five new cases are said to have developed before but had not been reported and did not, in fact, constitute new cases. The local organization was working effectively, its outstanding accomplishment having been the organization of a hospital which had doubled its capacity in the last three days. An emergency hospital was established in the high school. There are also hospital facilities at Pittsfield which are being utilized. The commissioner stated, according to the Boston *Transcript*, that the three local physicians who reside in Lee did notable work. The Berkshire County Medical Society furnished additional physicians. The commissioner said, July 11, that there are enough physicians to take care of the situation. The particular need was for nurses, and this was being met by the state health department, the American Red Cross and other health agencies. Fifty nurses arrived in Lee, July 13. Dr. Bigelow said that the source of the epidemic was infected milk, all of which is now being pasteurized or boiled. A few days before the outbreak two men who handled milk for the principal milk dealer in the community were sick; hemolytic streptococci were found in their throats. Drastic regulations have been put into effect. Persons with sore throats of any kind are forbidden to be on the streets; loitering in public places is forbidden; funerals must be private, and all persons must keep away from the high school, which is being used as a hospital.

MICHIGAN

Personal.—The mayor of Cadillac, Dr. Sair C. Moore, has been appointed county health officer.——Dr. Paul M. Moore, Jr., Detroit, has been appointed instructor in the nose and throat department at the State University of Iowa College of Medicine and Hospital, Iowa City.——Dr. Walter T. Parker has been appointed superintendent of the Memorial Hospital, Owosso.

Detroit's "Doctors for Men."—Following the presentation of evidence by the local medical society recently, the state police raided the office of "Doctors for Men," 1039 Farmer Street, Detroit. In court, "Dr." Henry Van Hala, one of the men connected with Detroit's "Doctors for Men," pleaded guilty to practicing medicine without a license. Howard Morris, another, pleaded guilty to violating the state pharmacy law and was fined $100. Dr. Ashton D. McKenney's case is said to have been dismissed as he was shown to have had a license to practice medicine. F. C. Fontaine escaped the day before the raid and is sought on a warrant charging extortion. Detroit's "Doctors for Men" have been in business since 1923 without previous interference from the law.

Society News — Anniversary Meeting. — The Oakland County Medical Society, Pontiac, devoted its anniversary meeting, July 19, to the subject of industrial surgery. Dr. Frederick J. Sober, medical director, Fisher Body Corporation, Detroit, gave a paper on "Evolution of Industrial Surgery and Its Aims"; Dr. Ethan B. Cudney, Flint, on "Organization of the Medical Department of the Oakland Motor Car Company," and Dr. John S. Lambie, Jr., Detroit, of the Fisher Body Corporation, on "Special Problems in Industrial Surgery." The members were guests of the Fisher Body Corporation at dinner. This society was organized in 1831, and the July meeting for many years has been designated as the anniversary meeting. The August meeting will be addressed by Dr. Grover C. Penberthy, Detroit, on "Appendicitis in Children."——The Livingston County Medical Society was organized, June 14, at a meeting at the Chemung Country Club. Dr. James D. Bruce, Ann Arbor, was the guest at the organization meeting, and Dr. Wellington B. Huntley, Howell, was elected president of the new society.——Dr. Frederick C. Kidner, Detroit, addressed the Muskegon County Medical Society, Muskegon, June 22, on "Surgical Fixation of Tuberculous Hips in Children," and held a clinic for cripples at the Hackley Hospital.——Dr. William T. Coughlin, St. Louis, addressed the Wayne County Medical Society, Detroit, May 16, on "Trifacial Neuralgia Major-Tic Douloureux."

MISSOURI

Fined for Failing to Report Births.—Since Missouri was admitted to the birth registration area, in September, 1927, two physicians (one each in Putnam and Carter counties) have been fined for failing to comply with the state law which requires the reporting of births. The authorization by the state health commissioner of the prosecution of physicians who fail to report births is an effort to comply with the law and to make the vital statistics of Missouri accurate and complete.

Society Condemns "Expert Testimony."—The house of delegates of the Missouri State Medical Association, in annual session, May 16, adopted a resolution condemning the practice of expert testimony both by the state and by the defense in criminal cases in which insanity is a plea. The reference committee which recommended this resolution also recommended that the by-laws of the association be amended and that any member violating this portion of the by-laws be amenable to the board of censors of his society for unethical conduct. The report of the committee was adopted.

Thirty Thousand Presents for "Tuberculosis Day."—Merchants, manufacturers and other citizens of St. Louis contributed more than 30,000 presents, it is reported, for distribution at the fourteenth annual celebration of Tuberculosis Day, July 19, at Sportsman's Park. A continuous round of entertainment was arranged, and the proceeds are to be devoted to the public health work of the Tuberculosis and Health Society of St. Louis. The festival was featured by exhibition drills by civic organizations, a concert by the Mail Carriers' Band, exercises by the Boy Scouts of America, and a big league ball game between the Cardinals and the Philadelphia National League team.

Promotions at Washington University.—Among the promotions in the faculty at Washington University Medical School announced at the last commencement are the following:

Dr. Malvern B. Clopton to professor of clinical surgery.
Dr. Glover H. Copher to associate professor of surgery.
Ethel Ronzoni, Ph.D., to assistant professor of biologic chemistry.
Dr. William H. Mook to assistant professor of clinical dermatology.
Dr. Richard S. Weiss to assistant professor of clinical dermatology.
Dr. William J. Dieckmann to assistant professor of obstetrics.
Arthur S. Gilson, Jr., Ph.D., to assistant professor of physiology.
Dr. Warren H. Cole to assistant professor of surgery.
Dr. Joseph W. Larimore to assistant professor of clinical medicine.
Dr. Thomas Kenneth Brown to instructor in obstetrics.
Dr. Bernard J. McMahon to instructor in clinical otolaryngology.
Helen T. Graham, Ph.D., (Mrs. Evarts A. Graham), to instructor in pharmacology.

MONTANA

Personal. — Dr. and Mrs. John W. Gunn, Butte, recently celebrated their fiftieth wedding anniversary.——Dr. Harry J. Huene has acquired the Forsyth Deaconess Hospital and has changed its name to Rosebud Memorial Hospital.——Dr. Paul D. Mossman, trachoma specialist for the U. S. Public Health Service, recently made a tour at the request of the state board of health to ascertain where trachoma exists, particularly in the schools of Wolf Point and Cut Bank. There appears to have been a difference of opinion in the diagnosis of cases in these schools, and Dr. Mossman was requested for consultation.

Trachoma heretofore has been considered present only on the Indian reservations in Montana, but it appears to have spread to the white population in the counties bordering the reservations.

NEW YORK

Outbreak of Smallpox. — Eleven cases of smallpox were reported in Cortland, June 20. On the day that a special vaccination station was opened, 1,200 persons were vaccinated with the assistance of local physicians. Smallpox has prevailed in central New York for several months, occurring at Ithaca, North Syracuse, Watertown, New Hartford, Spencer, Manlius and other places.

Dr. Weiskotten Resigns as Health Officer of Syracuse. —The resignation of Dr. Herman G. Weiskotten, for many years health officer of Syracuse, and the appointment of Dr. George C. Ruhland as his successor, were announced, June 27. Dr. Weiskotten believed the office should be filled by a man who would give his full time, and he desires to give his time to Syracuse University College of Medicine, of which he is dean. Dr. Ruhland, who was for about ten years health commissioner of Milwaukee, came to Syracuse in 1924. He will assume charge of the department of health, August 1.

Statement of Policy on Public Health Work. — The house of delegates of the Medical Society of the State of New York at the annual meeting in Albany, May 21, in receiving the report of the council, approved the following as a statement of policy (THE JOURNAL, June 9, p. 1878).

1. The essential part of public health work being preventive medicine, there should be no failure on the part of official or unofficial health and welfare organizations to recognize the importance of the local practicing physician.

2. All those associated in the conduct of public health activities must recognize fully that preventive medicine is the doctor's rightful field and that laymen must at all times look to the medical men for guidance and leadership therein.

3. Public health work within a county involves three participating factors: lay organizations, official governmental agencies, and the members of the county medical profession.

4. The evolution of a county health program should be the evolution of medical forces within the county. It is the duty of the local physicians to assume leadership in the organization.

5. The function of lay organizations and employees of the county health organizations, acting under the leadership of the practicing physicians of the county, includes assistance in educational work, in helping those who are unable to carry out the doctor's advice, and in providing means whereby the public health program may be carried out.

6. Lay organizations are needed in the county. Their cooperation is to be welcomed by the physicians. They are needed for the great educational work they can do, for their influence on public opinion, legislation and laws, and in many other ways. But preventive medicine must be controlled and guided by the medical men of the country.

7. As the function of the county health officer is not to exercise the function of the physicians of the county, but to explain the facilities and stimulate the use of these facilities by the citizens, therefore, before any innovations are put into effect by a demonstration or other agency, they should first be thoroughly studied and discussed by the medical society and the professional membership of the county board of health.

8. All local publicity should be of fact and simply to inform the people of the county of public health work which is being done, why it is being done, and why it should be done.

Health Conditions Less Favorable.—For the first time since the beginning of the century, there was no seasonal decline in the death rate of New York during May. According to the state department of health, health conditions for the fourth successive month of 1928 were definitely less favorable than during the preceding year. The death rate for the month was 15, the highest recorded in eleven years. The increase in total mortality was due to the specially high death rate of New York City, 15.6, as compared with 12.4 a year ago. The upstate death rate was increased from 13.6 to 14.3. The major part of the increase in mortality throughout the state was due to more deaths from diseases of the respiratory system and of the heart and blood vessels. The influenza rate, 32.6 per hundred thousand, was with one exception (1919) the highest ever registered in May; the pneumonia death rate (198.8) was the highest in eleven years and the rates from diseases of the heart (318.7), diseases of the arteries (67.9) and diabetes (31.6) for this month have never been higher. The increase in New York City was due to a measles epidemic, cerebrospinal meningitis and diphtheria. The death rate in May from scarlet fever (2.4), however, was lower only once before and the death rate from cancer, 120.2, was below the figure recorded last year.

Appointments at Syracuse University. — The following appointments to the staff of the College of Medicine of Syracuse University, Syracuse, have been made for the year 1928-1929:

Dr. Tracy L. Bryant, instructor, department of anatomy.
Dr. Robert B. Hartsfield, instructor, department of pathology.
Dr. Lee A. Hadley, instructor in physical therapy at the dispensary, department of medicine.
Dr. William J. Gabel, instructor in anesthesia at University Hospital, department of surgery.
Dr. Leo E. Gibson, instructor in urology at University Hospital, department of surgery.
Dr. Harry L. Gilmore, instructor at the dispensary, department of surgery.
Dr. Leonard M. Aguilino, instructor at the dispensary, department of surgery.
Dr. Paul H. Lowry, instructor at the dispensary, department of surgery.
Dr. Isaac N. Wolfson, instructor at the dispensary, department of surgery.
Dr. Francis W. Rosenberger, instructor at the dispensary, department of pediatrics.
Dr. Warren E. Saile, instructor at the dispensary, department of pediatrics.
Dr. Michael J. Elwood, instructor at the dispensary, department of pediatrics.
Dr. Franklin R. Webster, instructor at the dispensary, department of ophthalmology.
Dr. Armand U. Aguilino, instructor at the dispensary, department of dermatology.

New York City

Another Quack in Court. — Judge Mancuso gave a suspended sentence, June 22, to Dr. Orin W. Joslin, director of the "Spectro-Electronic Foundation," 362 Riverside Drive, and placed him on probation for three years following conviction on a charge of practicing medicine without a license. The judge warned Joslin that if he continued to use his machine except for "research work" he would order him rearraigned for sentence. Further details about quack Joslin were noted in the Propaganda Department of THE JOURNAL, Dec. 15, 1923.

Proposed Merger of City Hospitals.—There is a plan on foot to merge the municipal hospitals into a department of public hospitals of the city of New York, which will necessitate the appointment of a commissioner of hospitals to rank with other commissioners and hold office at the pleasure of the mayor. According to John W. Harrington of the New York *Herald Tribune*, the New York Academy of Medicine originated the movement to unite the city hospitals as a progressive step in the treatment and prevention of disease, as well as efficiency and economy in administration. The municipal hospitals comprise three groups: (1) Bellevue and allied hospitals; (2) hospitals of the department of welfare, and (3) hospitals of the department of health. The groups have, in all, twenty-six hospitals with about 14,000 beds. The present system is said to be obsolete, a part of it working fairly well and other parts causing numerous complaints and a waste of public funds. The board of estimate and apportionment has approved the proposed consolidation and the necessary ordinances have been prepared.

Hospital News. — The Joint Administrative Board of the New York Hospital—Cornell Medical College Association has approved the general plans for the new buildings. Demolition of the old structures now on the site is under way. Excavation will probably begin in the fall.—The construction of a new men's building for Kings County Hospital is expected to be undertaken this fall, west of the present structure. The women's chronic ward, condemned months ago, will be demolished; the Fitzgerald Building and the neurologic ward will be moved to make way for the new 1,500 bed structure. At a meeting of the medical board of the hospital, June 21, two new members were elected; Dr. Mervin C. Myerson to be in charge of the nose and throat treatment, and Dr. Daniel M. McCarthy for the medical service. Dr. McCarthy succeeds Dr. John B. Zabriskie, who moved to Switzerland, and Dr. Myerson succeeds Dr. Hubert Arrowsmith, who resigned because of ill health. ——Dr. Charles D. Fletcher, San Francisco, addressed the Journal Club of the Montefiore Hospital, July 9, on "The Tuberculous Pleurisies."

OHIO

Rabies Decreased in Cincinnati.—The number of cases of rabies in Cincinnati decreased 39 per cent during 1927 as compared with 1926. This was partly due, the board of health says, to the careful investigation made of each case by the health department. Of 840 persons reported bitten during the year, all were investigated and not one person became infected with rabies. The state law, permitting quarantine areas, is also effective in controlling rabies. The cooperation of the county dog warden is acknowledged by the health department. A child died of rabies in January, 1927, because, it is said, of some one's negligence in not reporting the case.

Society News.—At the fifty-sixth annual banquet of the alumni of Western Reserve University School of Medicine, Cleveland, June 12, Dr. Cyrus B. Craig, New York, gave an address on "Pictorial Neurology." At the election of the alumni association, Dr. Harry D. Piercy was made president and Dr. Fred C. Oldenburg, secretary.——Dr. Richard P. Bell won the annual golf tournament of the Academy of Medicine of Cleveland, June 27, with a low gross score of 70, establishing a new amateur record for the Lakewood Country Club course.

——The Montgomery County Medical Society held its annual meeting, June 1, at the home of Dr. Leora G. Bowers, Dayton, where a picnic supper was served. Dr. Reuben Peterson, University of Michigan Medical School, Ann Arbor, spoke on "Social and Medical Aspects of Sterilization"; Dr. William A. Ewing was elected president for the ensuing year. —— The Wayne County Medical Society, Wooster, was addressed, recently, by Charles H. Hunt, Ph.D., of the nutrition staff of the Ohio Agricultural Experiment Station; this meeting was held in the new Hygeia Hall of the College of Wooster (THE JOURNAL, March 31, 1051).

OREGON

Society News.—Dr. Harold C. Bean, Portland, addressed the Central Willamette Medical Society, June 7, at Eugene, on "Diagnostic Problems in Internal Medicine," and Dr. G. Schauffler, Portland, on "Pregnancy Complicated by Pyelitis, Tuberculosis or Thyroid Dysfunction."——Dr. William DeKleine, Salem, addressed the Tri-County Medical Society at Salem, June 5, on "Future of the Marion County Child Health Demonstration." Dr. DeKleine is the director of the demonstration. Dr. Eugene P. Steinmetz, Portland, spoke on "Toxemia of Pregnancy," and Dr. Joseph O. Van Winkle, Jefferson, on "The Army Medical Service."——Dr. Ray W. Matson, Portland, was elected vice president of the National Tuberculosis Association at the recent annual meeting in that city.——Dr. Charles E. Hunt has been elected chief of staff of the Pacific Christian Hospital, Eugene, for the ensuing year.

SOUTH CAROLINA

Committee to Review Expert Testimony. — The South Carolina Medical Association recently appointed a committee whose duty it shall be to review and report on new expert medical testimony given before a trial court in the county whenever requested by the society to do so.

Personal.—Dr. Rosko J. Wilson, Florence, has been elected president of the Palmetto Medical Association for the ensuing year. The next annual meeting will be at Charleston.——Dr. Edward P. White, Columbia, has been appointed director of the Cherokee County Health Department, succeeding Dr. Patrick H. Smith, Gaffney.

State Establishes Food Analysis Laboratory.—The dean of the Medical College of the State of South Carolina announces that the laboratory of the state food analysis commission will be established at the medical college at Charleston and that Roe E. Remington, A.M., Moorhead, Minn., has been appointed chemist for the commission. Mr. Remington has also been elected to the faculty of the medical college. The journal of the state medical society considers this an important undertaking by the state in view of the number of diseases of man that center about the problem of nutrition. South Carolina grown food will be studied to determine its content in iodine, calcium and other minerals. Mr. Remington is already in Charleston and laboratory equipment is being installed at the medical college. The chairman of the commission is Dr. William Weston, Columbia.

UTAH

State Medical Election.—The thirty-fourth annnual meeting of the Utah State Medical Association was held at Ogden, June 29-30, under the presidency of Dr. Eugene H. Smith. In addition to the Utah physicians there were on this program Drs. Joseph A. Capps whose subject was "Pericardial Pain"; Carl A. Hedblom, "Carcinoma of the Lung"; Arno B. Luckhardt, "Story of Ethylene Gas, the New General Anesthetic." The foregoing speakers were from Chicago; the following were from San Francisco: Drs. Edwin I. Bartlett, "Developments in Study of Bone Tumors"; Edgar L. Gilcreest, "Operation for Injuries of the Biceps Flexor Cubiti"; Aaron S. Green, "Common Delusions in Connection with the Eyes," and Harry Spiro, "Quinidine in Cardiac Irregularities," with motion picture demonstration. Other speakers were Dr. Eugene R. Lewis, Los Angeles, "General Principles in Nose, Ear and Throat Practice"; Dr. George Thomason, Los Angeles, "Acute Abdomen," and Dr. Isidor Cohn, New Orleans, "Surgery of the Reticulo-Endothelial System." At the business session Dr. William D. Donoher, Salt Lake City, became president; Dr. Howard P. Kirtley, Salt Lake City, was made president-elect; Drs. Ezekiel R. Dumke, Ogden, John W. Aird, Provo, and Richard A. Pearse, Brigham City, vice presidents; Dr. Maurice M. Critchlow, Salt Lake City, secretary, reelected, and Dr. Edward D. LeCompte, Sale Lake City, treasurer; Dr. Sol G. Kahn, Salt Lake City, was elected a delegate to the American Medical Association.

WISCONSIN

Licenses Revoked.—The Wisconsin State Board of Medical Examiners reports the revocation of the licenses of the following physicians for the reason indicated:

Otto E. Werner, Oshkosh: License revoked by court; sentenced to workhouse for nine months, and fined $500.
Simon W. Luban, Milwaukee: Violation of state narcotic law.

Personal.—Dr. Arthur L. Tatum, associate professor of pharmacology, University of Chicago, has been appointed a professor in the department of pharmacology at the University of Wisconsin. —— Dr. Walter G. Darling has been appointed health officer of Shorewood, succeeding Dr. Hedwin H. Becker, who held the position for about six years.——Dr. Roland E. Schoen has been appointed health officer of Beaver Dam.—— Dr. John R. Venning has been appointed health officer of Fort Atkinson.——Dr. John W. Coon, Stevens Point, has been made president of the Wisconsin Hospital Association for the ensuing year.——Dr. John M. Conroy has been appointed superintendent of the Pureair Sanatorium, Pureair, succeeding Dr. William E. Fawcett.

Increase in Mental Patients.—A census of feebleminded persons and persons with epilepsy, based on reports furnished by the Northern Wisconsin Colony and Training School and the Southern Wisconsin Colony and Training School, has been made by the U. S. Department of Commerce for 1927. The first admissions to these hospitals amounted to 192 patients during 1927, as compared with 203 in 1926 and 236 in 1922. The decrease in the first admissions in this period represents a still larger decrease in relation to the population of the state, as the first admissions in 1927 amounted to 6.6 per hundred thousand of population and in 1922, to 8.7. However, the total number of patients in the institution on Jan. 1, 1928, was 1,566 as compared with 918 on Jan. 1, 1910, and this increase was much greater, relatively, than the increase in the population of the state. For, on Jan. 1, 1928, there were 53.3 patients under treatment to each hundred thousand of the general population, as compared with 39.3 patients per hundred thousand population on Jan. 1, 1910. The number of patients under treatment has increased steadily from 1910 to 1928, with especially rapid increases during the years 1926-1927.

Society News.—Dr. Robert E. Burns, Madison, addressed the Waukesha County Medical Society, May 2, Oconomowoc, on "Acute Osteomyelitis."——The Kenosha County Medical Society was the guest of the Dominican Sisters, May 17, at a meeting in the new $150,000 unit of St. Catharine's Hospital, Kenosha.——About 100 physicians attended the June 11 meeting of the Sixth and Eighth Councilor District medical societies, Appleton; Dr. Walter C. Alvarez, Rochester, Minn., spoke on "How to Diagnose Gastro-Intestinal Disease from a Good History," and Dr. Paul B. Magnuson, Chicago, on "Relief of Disabilities, Old and New, in Fractures Around and Near Joints"; Dr. Thomas E. Jones, Cleveland, took the place of Dr. George W. Crile, Cleveland, who was unable to be present.—— The Wisconsin Urological Society recently elected Dr. James C. Sargent, Milwaukee, president for the ensuing year.——The Milwaukee Oto-Ophthalmic Society was addressed, June 8, by Dr. Isidore S. Kahn, San Antonio, Texas, on bronchial asthma. ——Dr. Ralph M. Waters, Madison, was presented with a silver loving cup at the seventh annual congress of Associated Anesthetists of the United States and Canada for his work in developing the carbon dioxide absorption method of anesthesia.

GENERAL

Medicolegal Department of The Journal.—The medicolegal abstracts which appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION were supplied by Mr. J. L. Rosenberger. Because of ill health and advancing age, he has been forced to discontinue his work with THE JOURNAL. The department will, however, be continued with the assistance of a new contributor. The services of Mr. Rosenberger, a lawyer with a profound sympathy for medicine, have been a valuable contribution to medicolegal progress in this country.

Honorary Degrees Conferred in June.—At the June commencement, the universities and colleges indicated conferred honorary degrees on the following persons:

Dr. James M. Anders, Philadelphia, University of Pennsylvania, D.Sc.
Dr. Solomon Solis Cohen, Philadelphia, Jewish Theological Seminary of America, New York, doctor of Hebrew literature.
Dr. Evarts A. Graham, St. Louis, Yale University, D.Sc.
Dr. Milton J. Greenman, Philadelphia, University of Pennsylvania, D.Sc.
Dr. George W. Crile, Cleveland, University of Glasgow, Scotland, LL.D.
Dr. Rudolph Matas, New Orleans, Princeton University, D.Sc.
Dr. George R. Minot, Boston, Harvard University, D.Sc.
Dr. William A. Pearson, Philadelphia, La Salle College, D.Sc.
Dr. William V. Whitmore, Tucson, Ariz., University of Arizona, LL.D.
John R. Mohler, D.V.M., chief, U. S. Bureau of Animal Industry, University of Maryland, D.Sc.

Dr. and Mrs. George F. Dick, Chicago, University of Washington.
Dr. Aldred S. Warthin, Ann Arbor, Mich., University of Indiana.
Robert A. Millikan, Ph.D., Pasadena, Calif., Princeton University, D.Sc.

Society News.—The seventeenth Annual Safety Congress will be held in New York, October 1-5, at the Waldorf-Astoria. ——Uel W. Lamkin, president of the Northwest Missouri State Teachers College, Marysville, Mo., was elected president of the National Education Association at the annual meeting in Minneapolis, July 5.——The seventh annual meeting of the Pacific Northwest Medical Association was held in Tacoma, July 5-7; among the guests were teachers from medical schools as far east as Baltimore and Montreal.——The Association of Military Surgeons of the United States will hold its thirty-sixth annual meeting in Baltimore, October 4-6, at the Hotel Belvedere.—— The Radiological Society of North America will hold its fourteenth annual meeting at the Drake Hotel, Chicago, December 3-7. The exhibitions, scientific sessions and most of the clinics will be under the same roof.——Dr. Walter L. Rathbun, Cassadaga, N. Y., was elected president of the American Sanatorium Association at the twenty-third annual meeting, Portland, Ore., in June; Dr. Ralph C. Matson, Portland, Ore., vice president, and Dr. Frederick H. Heise, Trudeau, N. Y., secretary.

Retired Pay for Disabled Emergency Officers.—The administration of the law passed by the last Congress (the Tyson-Fitzgerald Law) for the benefit of commissioned officers of the World War who suffered not less than 30 per cent permanent disability by reason of war service will be by the U. S. Veterans' Bureau, Washington, D. C. There are said to be about 3,000 emergency officers entitled to this benefit, of whom about 577 are members of the medical profession. Applications on form 544 should be filed promptly, as the final allowance of the application will date from the day on which it is filed at the veterans' bureau. The applicant must show that he is rated in accordance with law at not less than 30 per cent permanent disability by the veterans' bureau for disability in line of duty from war service. He must have had such rating prior to his application or must have it established on or before May 23, 1929. Form 544 may be secured from the veterans' bureau or at any regional office of the bureau throughout the country. When properly filled out it should be mailed to the U. S. Veterans' Bureau at Washington, D. C., where all applications will be passed on.

American Hospital Association Meeting in San Francisco.—The annual convention of the American Hospital Association will be held in San Francisco, August 6-10, under the presidency of Dr. Joseph C. Doane, Philadelphia. At least one special train will leave Chicago for the convention, July 29. Local trips and excursions in California will be made to some of the noted places such as Leland Stanford University at Palo Alto and a number of nearby hospitals, while a postconvention excursion to Hawaii has been planned for delegates who desire to go. There will be a variety of entertainment. Governor Young will deliver an address of welcome. There will be a round table conference for hospital social workers and a discussion of administrative problems. The guest of honor at the annual banquet and ball, Wednesday evening, will be Dr. Ray Lyman Wilbur, formerly President of the American Medical Association. In addition to many section meetings, a general session on special problems will be held Thursday afternoon and on that evening a "well chaperoned" party will visit San Francisco's Chinatown. The final session Friday morning will be a business meeting. There will be exhibits.

American Roentgen Ray Society.—The twenty-ninth annual meeting of this society will be held at Kansas City, Mo., September 25-28, with headquarters at the President Hotel. Observers at the International Radiological Congress in Stockholm in July will make reports at this meeting. The program is divided into (1) diseases of osseous system; (2) accessory sinus symposium; (3) diseases of the pulmonary system; (4) diseases of the gastro-enterologic system; (5) thymic gland symposium; (6) the therapy of malignancy, and (7) miscellaneous subjects, and the number of papers to be presented under each general subject ranges from three to nine. The scientific and commercial exhibits will be in the President Hotel. An informal lantern slide exhibition will be given, Tuesday evening, and members are invited to bring difficult case reports and slides. There will be scientific motion pictures. The Caldwell lecture will be given Wednesday evening, by Dr. Preston M. Hickey, professor of roentgenology, University of Michigan Medical School, Ann Arbor, following which there will be a reunion of the medical officers who attended the Kansas City School of Military Roentgenology in 1917. The annual banquet will be Thursday evening. Details concerning local arrangements may be had from the program committee, A.R.R.S., 1020 Rialto Building, Kansas City.

Government Services

Changes in Veterans' Bureau Personnel

The following changes are noted in the May *U. S. Veteran's Bureau Bulletin:*

Dr. Frank L. Biscoe, transferred from Albuquerque, N. M., to Fort Bayard, N. M.
Dr. Julian R. Blackman, appointed at Palo Alto, Calif.
Dr. Edward P. Bledsoe, transferred from North Little Rock, Ark., to North Chicago, Ill.
Dr. Herbert A. Burns, resigned at Fort Snelling, Minnesota.
Dr. Luther M. Callaway, appointed at Kansas City, Mo.
Dr. Edward H. Clark, transferred from Oklahoma City to Knoxville, Iowa.
Dr. Jesse D. Cook, resigned at Kansas City, Mo.
Dr. John G. Cullins, transferred from Bronx, N. Y., to Northport, Long Island.
Dr. Thomas G. De La Hoyde, transferred from Newark, N. J., to Washington, D. C.
Dr. Albert C. Field, resigned at Edward Hines, Jr., Hospital.
Dr. Charles M. Fullenwider, appointed at Muskogee, Okla.
Dr. Daniel C. Groves, transferred from Fort Bayard, New Mexico, to Albuquerque, N. M.
Dr. James C. Holdsworth, resigned at Edward Hines, Jr., Hospital.
Dr. Henry G. Lampe, resigned at Edward Hines, Jr., Hospital.
Dr. John J. Lancer, transferred from Little Rock, Ark., to Edward Hines, Jr., Hospital.
Dr. Thomas M. M. Leahy, transferred from Edward Hines, Jr., Hospital to Chicago.
Dr. David O. N. Lindberg, resigned at Livermore, Calif.
Dr. John M. Love, transferred from Outwood, Ky., to Edward Hines, Jr. Hospital.
Dr. George M. Melvin, transferred from North Chicago, Ill., to Philadelphia.
Dr. Edward C. J. Miller, reinstated at Rutland Heights, Mass.
Dr. Paul D. Moore, appointed at Palo Alto, Calif.
Dr. Reginald St. E. Murray, appointed at Perry Point, Md.
Dr. Thomas F. Neil, transferred from Excelsior Springs, Mo., to Edward Hines, Jr., Hospital.
Dr. John A. Nelson, transferred from Washington, D. C., Hospital to central office, medical service, N. P. division.
Dr. Clifton C. Nesselrode, appointed at Kansas City, Mo.
Dr. John J. Osterhout, appointed at Portland, Ore.
Dr. Jacob Paskind, resigned at Edward Hines, Jr., Hospital.
Dr. William J. Riley, Jr., resigned at Edward Hines, Jr., Hospital.
Dr. David R. Scott, resigned at Edward Hines, Jr., Hospital.
Dr. Dennis E. Singleton, resigned at Edward Hines, Jr., Hospital.
Dr. Clifton H. Smith, transferred from Outwood, Ky., to Edward Hines, Jr., Hospital.
Dr. Edgar A. Smith, resigned at Edward Hines, Jr., Hospital.
Dr. Henry L. Stick, transferred from Philadelphia, to North Little Rock, Ark.
Dr. Adolph D. Tollefsen, appointed at Walla Walla, Wash.
Dr. Anthony Trevisano appointed at Bronx, N. Y.
Dr. Allen H. Walker, transferred from Memphis, Tenn., to Little Rock, Ark.
Dr. David L. Williams, transferred from Rutland Heights, Mass., to Memphis, Tenn.
Dr. George W. Woodnick, resigned at Edward Hines, Jr., Hospital.
Dr. Nelson H. Young, transferred from Perry Point, Md., to Washington, D. C.

REGIONAL OFFICES

Dr. George K. Angle, resigned at Albuquerque, N. M.
Dr. Everett L. Hays, resigned at Indianapolis.
Dr. Oma E. Herndon, transferred from Atlanta, Ga., to San Antonio, Texas.
Dr. Alfred C. Kingsley, appointed at Phoenix, Ariz.
Dr. Ralph R. Loar, appointed at Bloomington, Ill.
Dr. Clyde F. Loy, resigned at Dallas, Texas.
Dr. Edward F. McGovern, appointed at Bridgeport, Conn.
Dr. Harold E. Rodgers, appointed at Albuquerque, N. M.
Dr. Paul G. Sudhoff, resigned at Cincinnati.
Dr. Leo R. Tighe, resigned at Albany, N. Y.
Dr. Frank A. Woodward, appointed at El Paso, Texas.

Navy Personals

Orders have been issued detailing the following to the fifth regiment of marines in Nicaragua: Lieut. Comdr. Brython P. Davis, Mare Island, Calif., and Lieuts. Samuel E. Johnson, San Diego; Thomas F. Duhigg, Parris Island, S. C., and Melvin S. Stover, League Island, Pa. Lieut. (j. g.) Arthur P. Morton has been found qualified for promotion to lieutenant. The following lieutenants (j. g.) have resigned: James H. Wall, Henry C. Wass and Bernhardt I. Wulff, all at League Island; Robert C. Luckey and Germain J. Cotta, Boston, and Cly H. Hatcher, San Diego. Twelve medical officers have been ordered to the naval medical school for a course of instruction beginning August 31, and Lieut. Comdr. Walter J. Pennell, now at Boston, has been ordered to temporary duty for a course of instruction at Massachusetts General Hospital. The following transfers have been recommended: Capt. Charles G. Smith from submarine base, Coco Solo, C. Z., to receiving ship, New York; Comdr. Dallas G. Sutton to the naval air station, Pensacola, Fla., and Lieut. Comdrs. Sterling S. Cook to the public health service of Haiti; Esdras J. Lanois to the U. S. S. *Denver;* Elphege A. M. Gendreau to the public health service of Haiti; Walter M. Anderson to naval hospital, San Diego, and James Moloney from the Virgin Islands to Hampton Roads, Va.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 16, 1928.

The Tetra-Ethyl Lead Inquiry

The committee which is inquiring whether the use of gasoline containing tetra-ethyl lead is injurious to health (referred to in previous letters to THE JOURNAL) has held another sitting. Sir William Pope, professor of chemistry at Cambridge University gave evidence. Questioned as to experiments on animals which had been made in America, he said that such experiments were not comparable with similar experiments on human beings. Lead acted so violently on the central nervous system that no deductions could be drawn from experiments on the lower animals. Asked whether experiments on monkeys would not be the nearest approach to experiments on man, he said: "Yes, but experiments on monkeys are not comparable with experiments on man. To obtain positive evidence as to whether the use of tetra-ethyl lead is injurious to health it would be necessary to experiment on garage hands. But nobody would dare to do so." "Does that mean that the committee cannot possibly answer the question put to them?" he was asked. "I think it will find the question very difficult to answer in any reasonable time," he replied. Asked to make a suggestion as to what the committee should do, he replied that stringent regulations should be drawn up governing the use of tetra-ethyl lead, and that something in the nature of a leaflet should be issued calling attention to the danger of its use. Every garage in which it is used should be placed under the supervision of the ministry of health and every employee medically examined. If experiments were made on garage employees by splashing gasoline containing tetra-ethyl lead about their clothing, a tremendous number of cases of poisoning would be discovered.

Another chemist, Prof. H. B. Baker, also expressed the view that there was danger in the use of tetra-ethyl lead. Nobody could go down Piccadilly without smelling of tetra-ethyl lead. He was asked, Is there any danger of people being poisoned in Piccadilly? He replied that the question was difficult to answer, adding "I have not yet suffered from walking down Piccadilly." Asked by the chairman how he would answer the question put to the committee, he said amid laughter: "I would get one of the persons who say that there is no danger, and try the experiment on him."

Prof. G. I. Finch of the Imperial College of Science and Technology gave evidence that gasoline containing lead could be safely used if proper regulations were made. He had made experiments with motor exhaust gases from cars burning ethyl gasoline, and had come to the conclusion that there was a danger to the community from the lead dust contained in these gases, especially in a congested area like London. The chairman pointed out that experiments had been made over the last five years in America, and no case of illness which could be attributed to gasoline containing lead could be traced. Professor Finch replied that it would probably be ten or fifteen years before the effect of the poison would be seen.

At a further sitting of the inquiry as to whether the use of tetra-ethyl lead in gasoline is injurious to the health, Dr. John P. Leake of the United States Public Health Service gave evidence. The chairman of the committee expressed gratitude for Dr. Leake's coming specially to this country to give the committee the benefit of a medical experience. Dr. Leake said that he was in charge of experimental investigations carried out for a committee of inquiry set up in 1924 by the United States government. This followed a number of fatal poisonings in New Jersey, where ethyl gasoline was extensively handled. The American committee came to the conclusion that there was no evidence of danger to the public from the use of ethyl gasoline. The members, as scientific men, however, said that they would like the observations to be continued for another year. It was the cumulative action of lead of which they were afraid. But further observation had confirmed the original conclusion. The American committee reported that there were no good grounds for prohibiting the use of ethyl gasoline provided it was subject to proper regulation.

Women Medical Students

The controversy which has arisen from the desire of the London hospitals which admitted women medical students under the stress of the war to revert to their former practice of exclusion has been described in previous letters to THE JOURNAL. The Medical Women's Federation has joined in the fray by a letter to the *Times*. It first refers to the so-called wastage among women physicians as a result of marriage, which has been estimated at 50 per cent. Investigations were at once undertaken by the federation by sending a questionnaire to the 1,000 members in the British Isles. It was found that only a small percentage have retired, a number of whom did so only after many years of active practice. The members were distributed as follows: general practice, 40.6 per cent; hospital or institutional work, 12.7 per cent; consulting and specialist, 14 per cent; research, 3.6 per cent; public health, 15.6 per cent; retired, 9 per cent; not ascertained, 4.5 per cent. In the correspondence in the press the suggestion was made by feminist sympathizers that pressure might be brought to bear on the hospitals which excluded women students by inducing supporters to withhold their subscriptions. However, the Council of the Medical Women's Federation does not approve of these tactics, for it has passed a resolution in which it states that "while welcoming the public support which has been generously accorded to the efforts to retain the presence of women in the coeducational schools, it deprecates any attempt to put pressure on the hospitals concerned by urging subscribers to withdraw their subscriptions."

The Definition of Drunkenness

In a previous letter (THE JOURNAL, June 9, p. 1883), the refusal of a magistrate to allow a physician to distinguish between the drunkenness of a motorist and of a pedestrian was discussed. Another London magistrate (Mr. Oulton) has given a much more sensible decision. Dealing with the case of a motorist he said: "Drunkenness which is punishable may be something less than drunk and incapable or drunk and disorderly. Surely the test of drunkenness, when applied to charges of drunk in charge of a car, or a child, or a steam engine or of firearms, must be definite loss of control due to drink. If the evidence, medical or otherwise, shows that owing to the consumption of alcohol a man is unable safely to control a care of which he is in charge, that man is guilty of an offence."

Great Increase of Smallpox

The alarming increase of smallpox cases during the last few years was emphasized by Major G. S. Parkinson, R. A. M. C., at the public health conference at the College of Nursing, London. In 1918 there were sixty-three cases; in 1921, 336; in 1927, over 9,000. Major Parkinson gave the neglect of vaccination among children as the chief reason for the rise. Only 37 per cent of the children of this country are vaccinated. Other reasons are the difficulty of the younger generation of physicians in recognizing cases, neglect to take medical advice, and lack of proper isolation accommodation in severely affected areas. The greatest danger of all is the unrecognized case.

The report of the smallpox and vaccination commission of the League of Nations draws attention to the remarkable decrease in smallpox in European countries during recent years.

England and Wales offer the sole exception to this general rule, owing to the increasing prevalence of a mild type of smallpox, or alastrim. The mortality, however, is almost negligible. The data obtained in Great Britain and Wales show that vaccination within ten years gives complete immunity from the disease. In 1926 there was not a single case among children below 12 years of age who had been vaccinated in infancy, whereas there were no fewer than 3,980 cases among children under 12 years of age who had never been vaccinated. The decrease in the incidence on the continent has been accompanied by a decrease in the severity of the disease.

Increase in Birth Rate

After repeated reports of lower rates, the number of births registered during the first quarter of this year in England and Wales went up considerably. They numbered 168,099, which, according to the registrar general's quarterly return, was 15,345 more than in the preceding quarter, and 973 above the number recorded in the first quarter of last year. These births correspond to an annual rate of 17.4 per thousand of the estimated midyear population for the year 1927. This rate is 0.1 a thousand above that recorded in the corresponding quarter of 1927. The cause of this increase is not clear but it probably is only a temporary fluctuation on the continuous fall in the birth rate which has been in force for half a century.

The Troubles of Medical Socialism

For some time the representatives of the societies that administer the national health insurance system have been complaining of the number of claims on their funds for sick benefit. At the conference of the National Deposit Friendly Society, in which more than 800,000 people are enrolled, it was stated that the number of those certified sick and the cost continue to increase. The president repeated the familiar appeal that panel physicians might be a little more sparing of certificates for sickness benefit. If a patient who means to have a longer holiday and a little easy money cannot obtain a certificate from his own physician, he takes his name off that physician's list and repairs to one who is "kinder." Moreover, the character of a physician for "kindness" or justice soon becomes known, and there is a natural flow of patients to physicians who give certificates easily. Early this year there was a supplementary estimate in respect of sickness benefit of more than $1,000,000. The government admitted that part of this expenditure was due to "a large number of people obtaining benefits who ought not to obtain them." "Overprescribing" for insured persons is another evil. It was discussed at the annual conference in Bournemouth of clerks to insurance committees. One member produced prescriptions, each for 1 pound of malt and oil, which, he said, were given to one patient on the 2d, 5th, 9th, 12th, 16th, 20th, 23d, 27th and 30th of one month.

PARIS

(From Our Regular Correspondent)

June 6, 1928.

Yellow Fever in Senegal

Some conclusions from the official report of Dr. Lasnet, *médecin inspecteur*, presented on returning from his mission to Senegal, French West Africa, have been given in a recent letter. In spite of the energetic measures that have been taken, the situation remains grave at Dakar. The return of the dry season and the cold nights, which kill the stegomyia mosquito, has caused a temporary check of the epidemic, as is the case every year at this time. But the disease will reappear next fall. The use of screens has been made compulsory in all houses, and fire has been used as a disinfectant in a considerable number of cases in the negro quarters. Under the direction of Dr. Sorel, the city has been divided into eight sectors, separated by wide streets. Day and night, disinfecting crews provided with masks, gloves and high boots pass through the streets and see to it that all the openings in houses are protected by screens. They seek out also even the smallest pools of water and sprinkle petroleum over the surface. At the height of the epidemic, all inhabitants who ventured out after 6 in the evening were required to wear, on pain of arrest, a costume similar to that described. All refuse capable of harboring the eggs of mosquitoes, broken bottles, tin cans, and the like, is carted away every day in special trucks. Five thousand cubic meters of such refuse has been already collected and dumped into the sea. But that is only one sixth of the total amount that needs to be removed. One exceedingly disturbing feature is that there are a great many negroes who are partially immune to the bite of *Stegomyia* but who are germ carriers, though they themselves do not show any warning symptoms. It is they who, with the appearance of the first rains, serve as hosts for the germs from which the mosquitoes of the new generation become infected. The administration has not made known the exact number of deaths. It was in 1926 that the first cases of yellow fever appeared in sporadic form, brought in probably from South America. Since then the disease has become endemic in Dakar, a city of more than 25,000 population, and it will likely be some time before it is eradicated, for it has extended to the neighboring regions of the coast of West Africa. As has been announced, it has already caused the deaths of several physicians. In addition to Noguchi, who was a member of the Rockefeller mission to the Gold Coast, Dr. William A. Young, director of the Medical Research Institute of the Gold Coast, has also succumbed to the disease. Dr. Sorel has proposed a rigorous measure; namely, that the whole native population of Dakar be removed to another region and that their habitations be destroyed completely. Dr. Pettit of the Pasteur Institute, who has also been sent on a mission to Dakar, has likewise declared that yellow fellow would never be eradicated from Dakar as long as the natives and the European population remain mingled together as at present.

The International Conference on Syphilis

The International Conference on Syphilis met recently at Nancy, under the chairmanship of Dr. Queyrat, president of the Ligue nationale française contre le péril vénérien, assisted by Professor Spilmann, dean of the Faculté de médecine de Nancy; Dr. Sicard of Plauzoles, general secretary of the conference, and Dr. Bayet, president of the Ligue nationale belge contre le péril vénérien. Addresses were delivered by MM. Spilmann, Queyrat, Bayet, Bash of Budapest, Sicard of Plauzoles, Bruntz, vice president of the Conseil de l'Université, and André Magre, prefect of the department of Meurthe-et-Moselle. The transactions of the conference lasted three days. The organization and extension of antisyphilitic dispensaries were discussed. MM. Archambault and Desloges of Montreal pointed out that they had been supported in their work by the clergy, which did not hesitate to give talks in the churches. Dean Spillmann of Nancy pointed out the necessity of uniting all efforts in the crusade against venereal disease, without thought of party or religion. Professor Bayet of Brussels confirmed the preceding reports. He called attention to the extent of the antivenereal crusade in Belgium from the day on which the queen and Cardinal Mercier inscribed their names at the head of the league. The work of the closing session pertained chiefly to the organization of the campaign against congenital syphilis. Some noteworthy papers were presented by Professors Ehlers of Copenhagen, A. Couvelaire of Paris, and Fruhinsholz, Caussade and J. Benech of Nancy. The convention discussed at length the question of antivenereal prophylaxis through instruction in the schools, and through sex education given young persons. It formulated its conclusions in the matter by the following resolution, which was unanimously accepted and transmitted to the public authorities: "The members of the conference hold essentially to the view that sex education should

be given progressively, taking natural history as the point of departure and adapting the instruction to the age of the children, in order to build up a rational defense against venereal diseases, by emphasizing that venereal diseases should be treated on the same basis as other contagious diseases (tuberculosis, measles, scarlet fever) by specially qualified phyicians. This applies to all classes of instruction."

The Medical Convention in Rabat

The journées médicales, or medical week, recently held in Rabat, Morocco, attracted a large number of French physicians. The chief point of interest, aside from a number of papers presented by eminent scientists on well known subjects, was the reorganization of the medical services of Morocco, which of late years have shown considerable progress. When Dr. Mauchamp was assassinated at Marrakesh in 1907 by fanatics, there were only isolated beginnings of a medical service but no native organization other than that of sorcerers and imams (Mohammedan priests). Today hospitals, lazarets, dispensaries, consultation services for the people, and milk distributing centers for infants, have sprung up everywhere. Crews of sanitary officers tour the country in automobiles. Other groups make it a point to attend the fairs and the great religious festivals, which often serve as foci for the spread of epidemics. Last year, more than two million consultations were thus given. Smallpox vaccinations to the number of 500,000 were performed, and 400 antirabic treatments were given.

NETHERLANDS

(From Our Regular Correspondent)

May 8, 1928.

Loss of Working Hours Due to Sickness

Van Zanten has published a study on loss of working time due to sickness. For a large enterprise, sickness among the personnel is of the greatest importance. From the figures collected by the officials of the city of Amsterdam, it may be deduced that, in 1924, 47 per cent, and, in 1925, 51.2 per cent of the employees were sick one or more times. The cases of sickness are closely dependent on the general state of health of the community. In an influenza year, the number of cases will be higher than in a normal year. It appears that, in 1924, 2.3 per cent, and, in 1925, 2.6 per cent of the days on which the employees concerned might have worked were lost on account of sickness.

As for the other communes, no corresponding figures can be given, since the administration employees are not considered in a single classification as they are in Amsterdam. In Rotterdam, for example, the employees of the various secretariats constitute a special category. Here, the average number of persons on the sick list, in 1924, was 3.1 per cent; in 1925, 2.8 per cent. At The Hague, the number of patients belonging to the category of secretariat employees reached, in 1924, 2.7 per cent; in 1925, 3.3 per cent. For the generality of employees, including both the technical and the administrative, the percentage ranges from 2.8 to 2.9. There is, therefore, a close agreement.

An Inquiry into the Incomes of Physicians of the Netherlands

Material that the central committee for the promotion of the interests of the profession has collected in connection with its inquiry on the income of the physicians of the Netherlands has just been published. The inquiry has added interest because of the present plethora of physicians in the Netherlands. The material collected dates back to 1912. The inquiry divides the physicians, for convenience, into four groups: (1) physicians residing in the rural districts, which includes communes with less than 5,000 inhabitants; (2) physicians residing in communes with from 5,000 to 20,000 inhabitants; (3) physicians of cities with from 20,000 to 200,000 inhabitants, and (4) physicians of Amsterdam, Rotterdam and The Hague, with more than 200,000 inhabitants each. The physicians were classified, furthermore, as physicians with no pharmacy, physicians with a pharmacy, and specialists. The division according to the number of years of practice led to definite conclusions. Further subdivisions are possible. Two thirds of the gross fees came from private practice, one sixth from the practice of health insurance societies, one sixth from fixed incomes; one sixth was absorbed by the overhead. In the various groups and subgroups, important differences could be noted. In general, it requires a period of six years before a physician is well established in his practice; for certain categories the period is still longer. For half of the physicians the net income is under 5,000 florins ($2,000). Only 7 per cent of the physicians have a net income in excess of 10,000 florins ($4,000).

The International Psychotechnic Conference

The fifth International Psychotechnic Conference will be held in Utrecht, September 10-14. In addition to a limited number of communications by members on subjects of their own choosing, the main topics to be discussed will be temperament in relation to character, amelioration through exercise, and the problem of accidents. Prof. F. Roels is chairman of the National Committee, which is charged with the organization of the conference.

Death of Lorentz, Physicist

The physicist Lorentz, who was awarded the Nobel prize in 1902, has died in Haarlem. Among his meritorious services may be mentioned his activities in promoting the Institut Solvay in Brussels. In 1926, he was the president of the commission on intellectual cooperation, of the League of Nations.

Vaccination Against Scarlet Fever and Diphtheria

Madame De Vries-Bruins, member of the lower house, contends that the question of vaccination should be subjected to a longer period of control before the results are regarded as definite. To exalt the results secured above their real significance might lead to an unjustifiable and harmful opposition to this form of vaccination, for the slightest failure of the vaccines to accomplish their purpose would be regarded by the people as a proof of their worthlessness. The minister of labor, commerce and industry gave the statistics on this form of vaccination and the favorable results that it appears to have produced: 50,000 persons have been vaccinated against diphtheria, 15,000 against scarlet fever, and 1,500 against both, which makes a total of 66,500 persons vaccinated. It appears also that the persons vaccinated have shown greater resistance to these diseases than the nonvaccinated, when the conditions have been comparable. Nevertheless, the confirmation that comes only from a long experience should be awaited.

Education of the Maimed and Crippled

The medicosocial committee of the Nederlandsche Maatschappij tot Bevordering der Geneeskunst has just published a report on the prophylaxis and treatment of the infirm. The statistics show that there are in the Netherlands more than 50,000 persons maimed or crippled. The following outline of the needs has been prepared: 1. The first thing necessary is to impose on physicians and midwives the obligatory declaration of physical defects, in order to secure the aid of municipal or communal physicians and instructors. 2. The creation of a chair of instruction in orthopedic surgery at one of the universities. 3. In the several districts, orthopedic surgical clinics with full equipment, with policlinics for research work, where the means of broadening the work of the existing institutions might be studied, should be established. 4. The initiative in these matters should be generously undertaken by the authorities. 5. The

expense of treatment of indigent infirm persons, until some definite decision has been reached on the subject, should be borne by the central government.

TURKEY

(From Our Regular Correspondent)

June 1, 1928.

Medical Practice Act

The need for stricter regulations in regard to the work of the medical and allied professions has long been felt. April 11, a bill introduced into the national assembly became law. According to its provisions, a person who desires to practice medicine in Turkey must have received a diploma at a Turkish university and must be a Turkish subject. A Turkish subject having studied abroad and presenting a diploma from a foreign university must first present himself for identification. Then he must finish his compulsory medical service, at the termination of which the foreign diploma is recognized and signed by the ministry of hygiene.

Specialists must have a certificate from the Turkish medical university or from an institution recognized by the ministry of hygiene. Those specialists who have made their special studies abroad are recognized if their studies have been made at an institution approved by the Turkish medical university. The title "professor" or the word "specialist" is to be used only by persons authorized to do so. A person practicing medicine is not allowed to engage in active commerce; he may maintain only one office besides the one located in his residence.

All physicians are obliged to be members of the chamber of physicians, which deals with offenses against professional duties and etiquette. Penalties are of three kinds: The first is a letter of reproof sent to the offender; the second, rebuke at a meeting; the third, suspension from private practice for a period of from one week to six months. The first two penalties can be decided on by the chamber of physicians, but the third is subject to a decision of a high court of the ministry of hygiene. The jury is composed of the deputy minister, who presides over the court, three directors of the ministry of hygiene, one judge appointed by the minister of justice, one professor from the medical university, one military physician and two civilian physicians from the local chamber of physicians. The members of the chamber of physicians are elected for a period of two years, those of the high court of deontology for three years.

Persons practicing medicine without a license or wrongfully assuming the title of Doctor of Medicine are sentenced to from one to six months in prison and to pay a fine of from 25 to 500 Turkish pounds. The license is revoked if a physician has twice been sentenced or if he has been sentenced to five years in prison or is suffering from a mental disorder. For the performance of any minor or major operation, physicians and dentists have to obtain a written statement of consent from the patient or his guardian. The state of unconsciousness and endangered life making immediate action necessary exempts one from this rule. Persons violating this rule will be fined from 10 to 200 Turkish pounds. Physicians, dentists and midwives must keep a book of accounts and records, a sample of which is furnished by the ministry of hygiene. Fraudulent attempts in connection with keeping the book will be dealt with according to article 345 of the penal code. The ministry of hygiene reserves the right to fix the minimum and maximum tariff in certain localities. The diplomas and licenses of defunct members of the medical and allied professions are punched by the ministry of hygiene and then returned to the families concerned. According to the Treaty of Lausanne, physicians, dentists and midwives able to prove that they were established in the country before 1924 have the right to continue practice. The medical practice act is to be enforced from the day of publication (April 14, 1928). Article 82 appoints as executives the minister of hygiene and social welfare, the minister of justice and the minister of public instruction.

The Antirabic Institute in Constantinople

The Antirabic Institute of Constantinople commenced its activities in 1890 with Zoiros Pasha, who for two years had studied under Pasteur in Paris. Several years later he resigned and Prof. August Marie from Paris took over the work, to be succeeded later by Prof. Paul Remlinger from the Institut Pasteur in Paris. Professor Remlinger remained in charge of the work for ten years. During the last twenty-five years, Dr. Haim Naim, who received his training under Nicolle in Paris, has been directing the work of the institute. There are two other governmental antirabic institutes, one in Sivas and the other in Diarbekir. In three municipalities, Erzeroum, Konia and Smyrna, antirabic work is also being done, but nine tenths of all the cases in the country are treated at the Constantinople institute. Rabies was very common in Turkey before 1911, when Prof. Dr. Djemil Pasha, then mayor of Constantinople, ordered all stray dogs to be destroyed and several thousand dogs were taken to a small arid island in the Sea of Marmora. Djemil Pasha's example was soon followed in other communities, with the result that rabies decreased to a considerable extent. Since the World War, rabies has been on the increase again. The institute at Constantinople has sixty beds available, of which twenty-five are for female patients. The beds are almost always occupied. The cases are treated by the methods of Pasteur and Högyes. Treatment begins at 6:30 a. m. and is free. The number of treatments given at the Constantinople institute during the period from 1921 to 1927 is as follows:

Year	Applications for Treatment	Treatments Given	Pasteur	Högyes
1921	579	337	224	113
1922	1,709	889	272	617
1923	1,456	1,035	218	817
1924	1,702	1,229	350	879
1925	1,871	1,289	453	836
1926	1,583	1,170	494	676
1927	1,694	1,204	552	652
	10,594	7,153	2,563	4,590

The animals responsible for these cases were: dogs, 5,693; cats, 586; jackals, 334; wolves, 133; mice, 88; horses, 46; donkeys, 40; cows, 19; oxen, 17; monkeys, 8; rabbits, 6; pigs, 5; roosters, 4; bears, 4; hyenas, 4; foxes, 3; hens, 3; sheep, 2; camels, 2; calves, 2; lamb, 1; mule, 1; goat, 1; human beings, 154. Of these animals, 2,225 were reported to be infected, 2,117 showed symptoms and 2,821 did not; 3,520 persons were bitten in the arm, 3,027 in the leg, 502 in the head, and 114 in the trunk. Of the persons bitten, 4,898 were males and 2,265 females. During the same period at the Sivas institute (in the center of Anatolia) 642 cases were treated by the Pasteur method; fourteen patients did not recover. At present a regulation exists according to which the municipalities are obliged to poison all stray dogs. In view of the increase of rabies, the ministry of hygiene is giving much attention to the subject. Bitten persons practically never go without treatment, as the danger of bites seems to be well established in the public mind and for indigent persons transportation and other expenses are paid by the municipalities.

Victims of Science

At the postgraduate Military Veterinary School in Constantinople a service was held, April 1, in commemoration of two veterinarians, Associate Professor Mayor Ahmed Bey and his assistant captain Hudajy Bey. While doing research work, both contracted glanders on the same day and both died after ten days from septicemia. A commemoration service is to be held, each year.

VIENNA

(From Our Regular Correspondent)

May 14, 1928.

Suicide Among Women in Vienna

In "Statistische Mitteilungen der Stadt Wien," Dr. Delannoy, the director of the department of statistics, deals with the suicides in Vienna in 1926, and draws comparisons with suicides of the past twenty-five years. In general, the tendency to suicide in the female sex is less marked than in the male, although it should be noted that the absolute number of suicides in both sexes is constantly increasing, so that today the number of female suicides has reached the figure that obtained among men, twenty years ago. The causes for the lessened resistance of women (of their "will to live"), Dr. Delannoy thinks, must be sought in the economic development of women's work—the increased competition of the two sexes, owing to the changed proportions in the distribution of the sexes, which have been brought about by the war. The supply of women workers has of course been much increased owing to the fact that there are fewer men looking for wives. During the period 1906-1914 there was a slow increase of suicide in both sexes. During that period the lowest figure for men was 406 (in 1906), for women, 140; the highest figure for men was 523 (in 1913), for women, 22. In the war years (1914-1918) there was an abrupt decrease in the figures for suicide, less manifest among women, however, than among men. The lowest incidence among men was in 1918 (307 cases); among women, 194 cases. The highest figure among men was in 1914, 470 cases; among women, in 1915, 243 cases. In the years after the war, the incidence of suicide among men rose to 395 and declined slowly to 346, but rose again rapidly to 418 and 502. In women, the number of suicides, since the war, has risen each year, with few exceptions, to 280, 270 and 373. It may be seen from the number of attempted suicides that women turn their thoughts more quickly to self-destruction but are more uncertain in the execution of their intentions. For instance: in 1926, 719 men attempted suicide, of whom 502 fulfilled their intentions; while 777 women made suicidal attempts and only 373 completed the act. The men showed a preference for the revolver and for hanging; women chose illuminating gas, for the most part.

Changes in the Vienna Medical Faculty

With the end of the summer semester, two of the best known instructors at the University of Vienna will be obliged to give up their posts: Prof. Dr. Wagner-Jauregg and Professor Ortner. The former has an international reputation, having been the first to receive the Nobel prize in medicine, and is now completing his *"ehrenjahr,"* or year of honor, a special concession of one year after having reached the retiring age of 70. The law requires that he lay down his post to make way for the oncoming generation. The second clinical instructor whose loss will be felt by the students is Professor Ortner. He is, to be sure, only a little past 60 years of age, but he has been in poor health for many years and has therefore finally decided to withdraw entirely from the instructional corps.

The Decrease in Goiter in Austria and Especially in Vienna

Professor Wagner-Jauregg, before the Vienna Society of Internal Medicine, reported recently the results of the crusade against goiter that has been carried on, on a large scale, in Austria, since 1923. The population received a table salt that contained 5 mg. of iodine per kilogram of salt. An iodin-free table salt may, however, be procured if a special request is made; if no such request is made, dealers are compelled to supply their customers with the iodized salt. Since salt is a state monopoly, the government was in a position to make the use of iodized salt almost compulsory. In this manner, almost every inhabitant of Austria receives from 0.03 to 0.05 mg. of iodine daily, as the daily consumption of salt amounts to between 6 and 10 Gm. Dr. Wagner-Jauregg emphasized that it is necessary that not only the persons actually affected with goiter receive iodine but that the whole population be brought under the influence of the treatment. The parents and their germinal cells need to come under the action of iodine, for in regions in which goiter is endemic the new-born children are frequently affected with goiter. Since 1923, all school children have been systematically subjected to an examination for goiter, on the basis of which they are divided into three groups: (1) those free from goiter; (2) those slightly affected with goiter, and (3) those markedly affected with goiter. In Vienna, 65,766 boys and 66,724 girls between the ages 6 and 14 were examined in the public schools. In 1927, the numbers were 51,853 and 53,275, respectively. In 1923, 57 per cent of the school children were free from goiter, but, four years later, there were 69 per cent free from goiter, under 10 years of age, and 56 per cent between ages 10 and 14. In 1923, 1.6 per cent of the children of the ages 6 to 10 were listed in the group with pronounced goiter; in 1927, only 0.16 per cent were so listed, or only one tenth as many; for the ages 10 to 14 the corresponding figures were 2.56 and 0.43 per cent. In other words, the effect of the iodized salt during the four-year period is expressed by the facts that, in the younger children, the marked goiter disease was reduced to one tenth, and, in the older children, to one sixth, and that the majority could be designated as free from goiter or only slightly goitrous. A second point that Professor Wagner-Jauregg emphasized is the decrease in the number of goiter operations in Vienna. Whereas, in 1923, 1,308 patients were operated on, in Vienna, for goiter, the number of such operations in 1927 was reduced to 806, or only 60 per cent of the figure for 1923. In the province of Lower Austria, the reduction amounted to only 22 per cent. These results are ascribed to the use of the iodized salt, which has been dispensed not only in Vienna but also in the provinces. It is held that, thereby, many a goiter that otherwise would have come to operation has been so diminished in size that the patient is very little disturbed by it and thus slips through the surgeon's hands.

Proposed New Regulations with Regard to the Title of Specialist

The League of Vienna Specialists has recently made an attempt to solve the long controversy and to establish the conditions that a physician must fulfil before he can assume the title of specialist. It is held also that the rush to the medical schools, a phenomenon of the postwar period, will be given a check if the admission to the ranks of the specialists, who enjoy certain privileges and receive larger fees for their services, is made more difficult. The following conditions for reception have been proposed: Professors and privatdozents at the Austrian faculties of medicine have the right to call themselves specialists in their respective fields. All other applicants for such privilage must present evidence of having had at least five years' training in their specialty, which must be acquired in appropriate institutions to be specially mentioned (clincs, policlinics). One year's training in suitable secondary branches may be counted as one year toward the five years' traning for the specialty; in some cases, another half year in auxiliary subjects. All such study must be done after obtaining a diploma as doctor of universal medicine. Training obtained in standard foreign university clinics and hospitals can be presented up to the extent of two years. Only such institutions at home and abroad as have bed patients and are not mere ambulatoriums shall be considered competent to give instruction. These regulations shall apply only to physicians who, at the time of the promulgation of this decree, have not been practicing their specialty at least three years. For surgery, gynecology, internal medicine, urology and ophthalmology, two years of service as assistant physician are necessary, the remaining time as hospital intern or junior assistant. For other specialties, it is not necessary to serve two years as assistant. Every specialist who

is called on to operate must have practiced surgery at least one year. These proposals were, for the most part, favorably received by the medical profession, so that their acceptance with only slight modifications appears likely.

The Number of Physicians in Vienna

The municipal bureau of health in Vienna, which, twice a year, prepares a directory of all persons engaged in sanitary work, gives, as of June 30, 1927, the total number of physicians in Vienna as 4,430, as against 4,375, six months previously. There were 396 women physicians. The number of hospital physicians—those who have no private practice but confine their practice to hospitals—was about 800. There are 3.5 physicians per thousand inhabitants, on the average, though the number varies considerably with the district. The central portion, with 80,000 inhabitants, has 480 physicians, or six per thousand, and in the hospital area, with 92,000 inhabitants, there are 730 physicians, or eight per thousand. For each 10,000 female inhabitants of Vienna there are 3.8 women physicians. Whereas the number of inhabitants shows almost no fluctuation, the number of physicians is increasing rapidly and constantly. During the past three years, 317 physicians have been added to the ranks. The medical societies and the faculty of medicine are much disturbed as to how the influx of medical students can be checked. It has even been suggested that no further students be admitted to the study of medicine, for a number of years, but, thus far, all that has been done has been to publish warnings to the effect that the medical profession is becoming overcrowded.

BERLIN

(From Our Regular Correspondent)

June 9, 1928.

Vital Statistics of Germany in 1926

The federal minister of the interior has just sent the reichstag a report of the federal health bureau on the vital statistics of Germany for the year 1926, which includes also a preliminary report for the year 1927. The report begins with the rather displeasing statement that the vital statistics for the German *reich* show plainly that a marked restriction of the growth of the population is quite generally desired. The number of marriages, to be sure, shows a further increase over 1924, and is, in fact, about equal to the last prewar values. The number of living births, on the other hand, shows a marked decline. The decline in the birth rate has continued on into 1927 and has led to the lowest rates ever recorded. Nor is the decrease in birth rate confined to the large cities, as is commonly assumed, but it is a manifestation under which also the rural districts are beginning to suffer to an alarming extent. It may be noted further that in communes with 15,000 and more inhabitants the number of legitimate living births in 1926 was only 13.3 per thousand inhabitants, so that for each marriage of that year there were only 1.6 living births, whereas the proportion for the whole *reich* in 1925 was 2.4, and in 1900 was about 4. The infant mortality, on the other hand, has been reduced. With a mortality of 10.1 per hundred living births, the death rate for 1926 reached the lowest recorded level. For purposes of comparison, it may be noted that the mortality rate, on the average, for the decade 1901-1910 was 18.1 per hundred living births. Also the mortality of young children, aged 1 to 5, was further reduced, one of the lowest death rates for that period of life in Europe being attained. In a comparison of the death rates of the cities and the rural districts, it appears that the large cities have the lowest infant mortality, whereas the mortality of children over 1 year of age is distinctly higher in the cities than in the small communes.

As for the incidence of disease, there was, above all, a marked decrease of tuberculosis mortality. The figure is only slightly higher than the minimum tuberculosis mortality for Europe, as recorded in Denmark and in England. Conditions are much less favorable with regard to scarlet fever. Here, the number of cases and also the mortality show in 1926 a still further increase. Measles has abated greatly; diphtheria has retrogressed somewhat, while whooping cough presented an almost unchanged incidence. There was a notable increase in the number of cases of infantile paralysis—from 1,200 up to 1,614. Influenza showed a slight increase in the case morbidity, though, in the main, it is taking on again the character of a disease claiming its victims almost exclusively among the very young and the very old, its manifestations being now much the same as before the war. Also the number of suicides, especially in the smaller communities, shows an increase. The state of nutrition of the people is designated in the report as satisfactory, for the most part, although in some districts about one fifth of the school children were found to be subnormal from the standpoint of nutrition. The consumption of meat attained in 1926 was about 93.1 per cent of the prewar consumption, and showed in 1927 a rising tendency. To sum up, the report states that, measured not only by the years immediately preceding but also by the prewar period, the German people is, at present, in general, in a satisfactory condition of health. The spread of contagious diseases, in comparison with preceding decades, is exceedingly low. The mortality, in contrast with the increasing morbidity among the members of the *krankenkassen*, is low. However, the lack of suitable dwellings still remains a retarding factor in the development of the German people, and every effort must be made to do away with that evil.

Malignant Diphtheria

Before the Verein für innere Medizin und Kinderheilkunde, Professor Seligmann, a department head at the Municipal Bureau of Public Health, gave recently an address in which he called attention to the increase of malignant diphtheria in Berlin. The morbidity has increased from 2.9 per thousand of population in 1925 to 6.3 per thousand in 1927. The increase is noted in all age groups, though chiefly in school children. The manifestation is supposed to be due to the increased virulence of the causative agents together with unfavorable social conditions. That too late treatment of the disease has little or nothing to do with the increased virulence is shown, it is thought, by the statistics of the hospitals, which present case mortality rates of from 8 to 22 per hundred. The theory of Professor Schwalbe, as given in the *Deutsche medizinische Wochenschrift*, some time ago, that malignant diphtheria is ascribable chiefly to the character of the milieu in which it develops and therefore can be designated a "milieu disease," was confirmed by Professor Seligmann. Of 130 deaths from malignant diphtheria, more than 50 per cent occurred in squalid surroundings.

Marriages

Robert B. Smallwood, Bedford, Ind., to Miss Letha L. Jensen of Marshfield, Wis., at Indianapolis, June 30.

Charles Gettes, Philadelphia, to Miss Edith Sylvia Hurwitz at Brookline, Mass., March 24.

Samuel Stephen La Nasa, Geneva, N. Y., to Miss Angels Lascola of Buffalo, June 23.

Harry C. Olmsted to Miss Virginia Scranton Boutelle, both of Seattle, June 23.

Leo P. Martin, Cook, Neb., to Miss Margaret Bro of Nebraska City, recently.

John G. Woodin to Miss Agnes Sweitzer, both of Grand Island, Neb., recently.

Chester Q. Thompson to Miss Margaret Robinson, both of Omaha, June 7.

John Milne Jackson, Nakusp, B. C., to Miss A. Polson of Nelson, June 2.

Harry Goldin to Miss Anna Edith Eskolsky, both of New York, July 1.

Deaths

Myles Standish, Boston; Harvard University Medical School, Boston, 1879; emeritus Williams professor of ophthalmology at his alma mater; at one time professor of ophthalmology, Dartmouth Medical School, Hanover, N. H.; member of the American Academy of Ophthalmology and Oto-Laryngology, and the Massachusetts Medical Society; past president of the American Ophthalmological Society; formerly on the staffs of the Massachusetts General, Boston City and the Carney hospitals and the Massachusetts Charitable Eye and Ear Infirmary; aged 76; died, June 26, at the home of his son-in-law in Cambridge, Mass.

Omar Barton Pancoast ✠ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1897; associate in clinical surgery at his alma mater; on the staffs of the Union Memorial Hospital, Hospital for Women of Maryland and the Church Home and Infirmary; aged 56; dispensary surgeon to the Johns Hopkins Hospital, where he died, July 2, of myocarditis and coronary thrombosis.

Arthur Leland Smith ✠ New Brunswick, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1890; past president of the Middlesex County Medical Society; for twelve years member of the board of education, during five of which he served as its president; formerly member of the the board of health; on the staffs of the Middlesex General and St. Peter's hospitals; aged 64; died, June 12.

Don Roscoe Joseph, St. Louis; St. Louis University School of Medicine, 1907; associate dean, professor and director of the department of physiology at his alma mater; at one time a fellow of the Rockefeller Institute for Medical Research; formerly associate professor of physiology, Bryn Mawr College; physiologist to St. Mary's group of hospitals; aged 46; died, July 9, of pneumonia.

Duff Green Lewis, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1891; member of the Medical Society of the District of Columbia; formerly clinical associate in surgery, George Washington University Medical School; aged 58; died, June 17, at the Garfield Hospital, of carcinoma of the tongue with general carcinomatosis.

Samuel Harvey Bateman, Washington, Iowa; Medical Department of the National University of Arts and Sciences, St. Louis, 1914; member of the Iowa State Medical Society; on the staff of the Washington County Hospital; aged 46; died, June 19, in the Burlington (Iowa) Hospital, as the result of a septic sore throat.

James Hiram Tanquary, St. Louis; College of Physicians and Surgeons, Chicago, 1883; member of the Missouri State Medical Association; at one time professor of orthopedics, Barnes Medical College; formerly on the staff of St. Louis City Hospital number 2; aged 72; died suddenly, July 2, of heart disease.

Jonathan Slater Prout, Brooklyn; National Medical College, Washington, D. C., 1856; emeritus professor of ophthalmology, Long Island College Hospital; Civil War veteran; formerly on the staffs of the Kings County Hospital and the Brooklyn Eye and Ear Hospital; aged 94; died, June 12, at the home of his niece in Fishkill, N. Y.

George Reuben Eckles, Holdenville, Okla.; Medical Department of the Tulane University of Louisiana, New Orleans, 1891; for several years member of the board of education; formerly city and county health officer; served during the World War; aged 61; died, June 10, of paralysis.

Gilman Robinson Davis, Charleston, W. Va.; Miami Medical College, Cincinnati, 1878; New York Homeopathic Medical College and Hospital, 1879; member of the West Virginia State Medical Association; aged 73; died, June 11, as the result of injuries received in an automobile accident.

George Frederick Ruppert, Elgin, Ill.; St. Louis University School of Medicine, 1908; member of the Illinois State Medical Society; veteran of the Spanish-American War; aged 56; on the staff of St. Joseph's Hospital, where he died, June 22, of carcinoma of the pancreas.

Hugh Williamson Reynolds ✠ Hibbing, Minn.; University of Minnesota Medical School, Minneapolis, 1914; served during the World War; on the staffs of the Adams Hospital and the Hibbing Detention Hospital; aged 40; died, June 30, of pneumonia, complicated by meningitis.

Alexander Siedschlag von Mansfelde, Ashland, Neb.; Rush Medical College, Chicago, 1872; member of the Nebraska State Medical Association; formerly professor of pathology and histology, Omaha Medical College; aged 82; died, June 17, of carcinoma of the bladder.

Eleanor Jean Hetrick Lawson, Kittanning, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1900; member of the Medical Society of the State of Pennsylvania; aged 50; died, March 10, at the Presbyterian Hospital, Pittsburgh, of interstitial nephritis.

John Elmer Everitt, Sayre, Pa.; Medical Department of the University of the City of New York, 1887; member of the Medical Society of the State of Pennsylvania; aged 65; died, February 28, at the Arnot-Ogden Hospital, Elmira, N. Y., of pernicious anemia.

James Albert Jackson, San Diego, Calif.; University of Southern California College of Medicine, Los Angeles, 1903; member of the California Medical Association; served during the World War; aged 49; died, May 31, of carcinoma of the esophagus.

George R. Bell, Fairoaks, Calif.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1888; member of the California Medical Association; formerly a practitioner in Chicago; aged 65; died in May, of diabetes mellitus and paralysis.

Elliott W. Gordon, Edwardsville, Kan.; College of Physicians and Surgeons, Medical Department of Kansas City University, Kansas City, 1895; aged 71; died, June 12, in the Grandview Sanitarium, Kansas City, of hypostatic pneumonia.

Martin M. Grove, Dell Rapids, S. D.; Medical Department University of Illinois, Chicago, 1905; member of the South Dakota State Medical Association; medical superintendent of the Dell Rapids Hospital; aged 58; died, June 28, of pneumonia.

David Byron Harvison, Pasco, Wash.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1895; member of the Washington State Medical Association; served during the World War; aged 67; died, June 19, of cerebral hemorrhage.

Henry H. Frudenfeld, Minneapolis; Medical Department University of Illinois, Chicago, 1902; member of the Minnesota State Medical Association; aged 51; died, June 19, of stones in the common and hepatic ducts and biliary cirrhosis.

William Davis, Gloversville, N. Y.; Albany Medical College, 1883; member of the Medical Society of the State of New York; on the staff of the Nathan Littauer Hospital; aged 71; died suddenly, in June, of angina pectoris.

Charles William McClearn, Malden, Mass.; University of Vermont College of Medicine, Burlington, 1884; formerly member and chairman of the board of health; aged 69; died in June, of chronic interstitial nephritis.

Chauncey Franklin Chapman ✠ Lincoln, Neb.; College of Physicians and Surgeons, Chicago, 1892; superintendent of health of Lincoln since 1915; aged 65; died, February 9, of carcinoma of the prostate.

Zephaniah S. Foulon ✠ East St. Louis, Ill.; Missouri Medical College, St. Louis, 1887; on the staffs of the Christian Welfare Hospital and St. Mary's Hospital; aged 66; died, June 30, of myocarditis.

August L. Lyons, Lake Charles, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1889; health officer of Calcasieu Parish; aged 62; died, June 14, of cerebral hemorrhage.

Reinhart J. Ritz, Scranton, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 58; died suddenly, June 28, of heart disease.

William Hewson Baltzell, Wellesley, Mass.; University of Maryland School of Medicine, Baltimore, 1889; formerly on the staff of the Johns Hopkins Hospital, Baltimore; aged 70; died, June 3.

Frank Eugene Rudolf, Davenport, Iowa; Louisville (Ky.) Medical College, 1891; for many years county coroner; aged 66; died, June 23, at St. Luke's Hospital, as the result of a cerebral hemorrhage.

Mannie Perkins Newman, Dyer, Tenn.; Vanderbilt University School of Medicine, Nashville, 1927; aged 25; intern, Carney Hospital, Boston, where he died, June 14, of acute nephritis.

Hale Percy Greaves, Water Proof, La.; Memphis (Tenn.) Hospital Medical College, 1893; aged 61; died, June 12, at Natchez, Miss., of arteriosclerosis and softening of the brain.

Henry Clay Carson ✠ Osaka, Va.; College of Physicians and Surgeons, Baltimore, 1892; aged 57; was instantly killed by a train, June 18, while walking home from attending a patient.

Joseph P. Saizan ✦ Opelousas, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1890; bank president; aged 61; died, June 13, of chronic nephritis.

George Milburn Morrow, Birmingham, Ala.; Miami Medical College, Cincinnati, 1868; Civil War veteran; aged 81; died, May 2, of lobar pneumonia and myocarditis.

Clarence Wilkie Harris, Pinconning, Mich.; University of Michigan School of Medicine, Ann Arbor, 1892; aged 59; died, February 23, of rupture of the gallbladder.

John Davis Hartley ✦ San Diego, Calif.; University of Michigan Medical School, Ann Arbor, 1873; aged 81; died, May 2, of carcinoma of the prostate and uremia.

Walter B. Reynolds, Olean, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1874; aged 77; died, March 3, of chronic nephritis and myocarditis.

Oscar E. Kendall, Sikeston, Mo.; Vanderbilt University School of Medicine, Nashville, 1884; Confederate veteran; aged 82; died, May 8, of chronic myocarditis.

Isaiah Lukens ✦ Tekamah, Neb.; Jefferson Medical College of Philadelphia, 1890; formerly mayor; aged 64; was found dead in his office, in June, of heart disease.

Alanson Shepard Douglas, Washington, D. C.; Medical Department of Columbian University, Washington, 1885; aged 85; died, June 12, of heart disease.

John W. Hall, Gananoque, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1923; aged 28; died, January 17, of pulmonary tuberculosis.

Herbert M. Seem, Mount Dora, Fla.; Jefferson Medical College of Philadelphia; 1882; aged 70; died, June 19, at Orange, N. J., of myocarditis.

Robert E. Jones, Longmont, Colo.; University of Louisville (Ky.) School of Medicine, 1898; aged 59; died, May 13, of a self-inflicted bullet wound.

William Donald Rankin, Woodstock, N. B., Canada; University of Edinburgh, Scotland, 1890; aged 62; died, March 31, of angina pectoris.

Frans L. Norin, Roseau, Minn.; St. Paul Medical College, 1886; formerly president of the board of education; aged 69; died, April 6, of myelitis.

John Edgar Reid, Madill, Okla.; Kentucky School of Medicine, Louisville, 1898; aged 63; died, March 23, of carcinoma of the stomach.

James H. Wilson, Fowblesburg, Md.; University of Maryland School of Medicine, Baltimore, 1868; aged 83; died, June 27, of senility.

Elijah Brazier Blalock, Marshall, Texas; Kentucky School of Medicine, Louisville, 1890; aged 66; died, January 28, of cerebral hemorrhage.

Joseph M. Rappold, Hamon, Texas; University of Louisville (Ky.) School of Medicine, 1893; aged 55; died, May 23, of diabetes mellitus.

Luther Barton Wilson, Baltimore; University of Maryland School of Medicine, Baltimore, 1877; aged 71; died, June 4, of heart disease.

John Wesley Bell, Medina, Ohio; Kentucky School of Medicine, Louisville, 1892; aged 58; died in June, of cerebral hemorrhage.

Frederick Ward Webber ✦ Newton, Mass.; Harvard University Medical School, Boston, 1879; aged 70; died, June 19, of pneumonia.

Charles D. Ryerson, West York, Ill.; Medical College of Ohio, Cincinnati, 1881; aged 74; died, June 14, of cerebral hemorrhage.

Millard Clay Wyatt, Bartlesville, Okla.; Missouri Medical College, St. Louis, 1882; aged 67; died, June 29, of diabetes mellitus.

James A. Acton, Cincinnati; University of Louisville (Ky.) School of Medicine, 1893; aged 71; died, June 3, of myocarditis.

Charles Day Shuart ✦ Waupun, Wis.; Rush Medical College, Chicago, 1900; aged 56; died, June 26, of pneumonia.

John W. Jeffries, Waltonville, Ill.; American Medical College, St. Louis, 1879; aged 83; died, June 16, of senility.

Bernard J. Ratterman, Cincinnati; Miami Medical College, Cincinnati, 1873; aged 80; died, June 24, of myocarditis.

S. B. Burnett, Roxton, Texas (registered, Texas, under the Act of 1907); aged 62; died, January 26, of pellagra.

Costello Bates, Waldron, Mich.; Columbus (Ohio) Medical College, 1881; aged 74; died, June 9, of heart disease.

Charles W. Goff ✦ Montrose, Mich. (licensed, Michigan, 1900); aged 83; died, May 22, of chronic nephritis.

Bureau of Investigation

NATURE'S WAY REDUCING CREAM

Oil, Wax, Epsom Salt, Baking Soda and Alum as Cure for Obesity

It is difficult to say which is the easiest way to affluence via the nostrum route—whether by the sale of a highly alcoholic tonic, the pushing of an alleged hair-grower, or the exploitation of a "cure" for obesity. Certain it is that the fat cure ranks high as a simple method of separating a not inconsiderable portion of the public from its money. And the game is a safe one. Should the "cure" be of the type that is to be rubbed on the surface of the body, it would be difficult to bring the exploiter to task under the national Food and Drugs Act, which defines a drug as a substance that is used in the alleviation or cure of disease. It is not surprising, then, to find utterly worthless mixtures put on the market under claims that are so preposterous as to evoke august merriment in all who are not so obsessed with the idea that they must reduce their weight that they have lost all perspective.

All of which is preliminary to the statement that Health Laboratories, Ltd., of Chicago are able to get $15 for a few ounces of a harmless, but worthless, mixture sold under the claim that, when rubbed on the human body, it "reaches the excess fat deposits immediately underneath and slowly dissolves them."

"Nature's Way Reducing Cream" has been introduced to the obese public by a twelve-page pamphlet that is said to be dedicated "TO THOSE WHO HAVE BEEN DELUDED BY FALSE AND DANGEROUS METHODS FOR REDUCING." The nub of the claims made for this preparation appears in the opening paragraph, which reads:

> "The faithful use of Nature's Way Reducing Cream, as directed, will give you normal size to *any part* of your face or body that may be enlarged by excess fat, without leaving the skin wrinkled, scrawny or flabby. It is actually a skin food and after the disappearance of the excess fat tissue just underneath the skin, the skin itself is left firm, vigorous and radiant with health."

As already quoted, the explanation of how this "wonder" works is that the product dissolves the fat deposits. The modus operandi is still further elaborated thus:

> "In brief, Nature's Way Reducing Cream reverses the natural processes of excess fat storage in the human body, by retarding the property of the fat cells to store fat; and finally, this disturbance slowly breaks down the fat cells, and they are then released and passed out of the body in nature's own simple way."

No medical or quasi-medical fake ever had a simple genesis. It always originates in the sweat and blood of its "discoverer," who toils for years in working out his product., The inventor of Nature's Way Reducing Cream is said to be one E. J. Samson, whose creative activities in his chosen field are thus described:

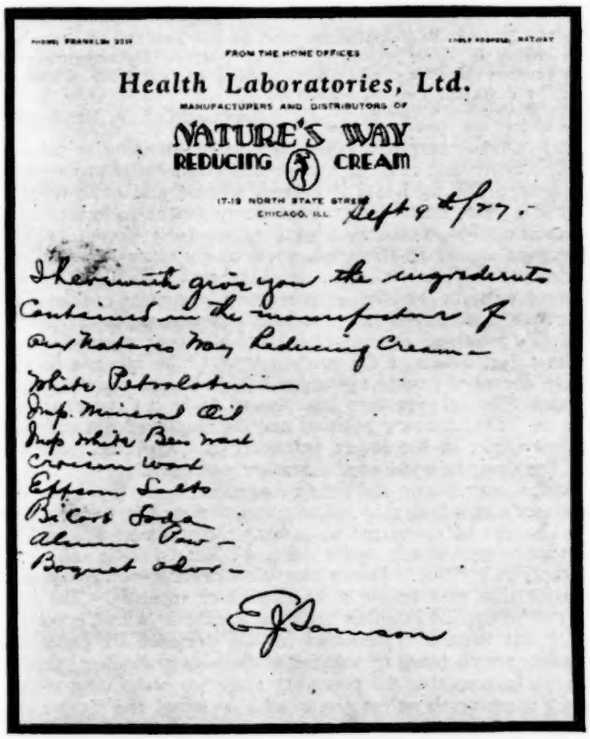
> "In construction it [Nature's Way Reducing Cream] is a simple and harmless formula, yet highly specialized by an able chemist, after years of research and patient experimentation. Its preparation involved professional contacts with men in many related fields of science in Europe and America."

Nature's Way Reducing Cream was first brought to the attention of the Bureau of Investigation of the A. M. A. by the Chicago Better Business Bureau, an organization which, being interested in truth in advertising, would naturally take some notice of the claims made for such a piece of hokum as an "obesity cure." This interest was heightened by the fact that Marshall Field and Company's department store was selling this piece of quackery. E. J. Samson, the alleged originator, submitted what purported to be a list of the ingredients contained in Nature's Way Reducing Cream. A photographic reproduction of this material appears with this article. A study of it will permit the reader to evaluate the probable scientific status of the "able chemist" who, "after years of research and patient experimentation," was able to give to the world Nature's Way Reducing Cream. Especially should one call attention to Mr. Samson's quaint spelling of epsom salt.

When the alleged formula was submitted to the Bureau of Investigation, the Chicago Better Business Bureau was told that

such a mixture when rubbed on the skin was quite harmless but that, as a remedy for obesity, it was an utter humbug; that it would no more reduce the weight of women who rubbed it on their persons than it would reduce the national debt. The statement that the stuff was harmless was immediately seized on by the exploiters and the Health Laboratories, Ltd., stress in their advertising the claim that certain physicians have expressed the opinion that Nature's Way Reducing Cream will not produce the slightest disturbance to any organs of the body, when applied externally! The further fact that the Bureau of Investigation of the American Medical Association expressed at the same time the very positive opinion that Nature's Way Reducing Cream is a preposterous humbug is not mentioned.

The idea that a woman with "abnormal breasts, large hips or heavy thighs" can reduce the size of these portions of her anatomy by rubbing on a mixture of petrolatum, mineral oil, beeswax, epsom salt, baking soda and alum, is so fantastic



FROM THE HOME OFFICES

Health Laboratories, Ltd.

MANUFACTURERS AND DISTRIBUTORS OF

NATURE'S WAY
REDUCING CREAM

17-19 NORTH STATE STREET
CHICAGO, ILL.

Sept 9th/27.

I herewith give you the ingredients
Contained in the manufacture of
our Nature's Way Reducing Cream—
White Petrolatum
Imp. Mineral Oil
Imp. White Bees wax
Cocoa Nut Oil
Epsom Salts
Bi Carb Soda
Alum Pow—
Boracic Acid—

E J Dawson

that the thing would be farcical if such ignorance were not tragic. That women should be paying $15 for a few ounces of such a simple mixture and that a reputable department store—whose record for honest dealing is a national by-word—should permit itself to be used for the exploitation of such a humbug, are facts that call for more than passing comment.

Magnetic Aid in Bronchoscopic Work.—The fundamental limitation, of course, is that there are only three common substances that are susceptible to magnetic attraction; namely, iron (or steel), nickel and cobalt. The foreign body must therefore be composed partly or wholly of these for magnetic aid to receive any consideration in the solution of the problem of extraction. Some alloys of iron are not magnetic and there is a nonmagnetic steel and a nonmagnetic cast-iron. . . . Any form of magnet exerts its greatest power on contact. Therefore, contact of the magnet with the foreign body should be made if possible. Out of contact, the loss of power for all practical purposes is at a greater rate than as the square of the distance. As there is no substance that will impede magnetic lines of force, intervening tissues do not prevent magnetic attraction except as they may hinder movement of the foreign body. It is the intervening distance and not the intervening tissues that lessens practical efficiency of the magnet for our purposes. —Jackson, Chevalier: *Ann. Otol., Rhinol. & Laryng.*, June, 1928.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

RADIOTHERAPY FOR BIRTH MARKS — TREATMENT OF PSORIASIS

To the Editor:—Could you inform me as to whether radiotherapy has any effect in removing a birth mark of the so-called wine stain variety? If so, would such treatment be advisable when the mark is situated near the eye? Please outline the most successful treatment for psoriasis of twelve years' standing which is not benefited materially by the ultraviolet ray.

PETER MELLING, M.D., Edgerton, Alta.

ANSWER.—A small or moderate sized port wine mark is best treated by the application of carbon dioxide snow, electrodesiccation, electrolysis or water cooled untraviolet ray with pressure; the method of choice depends on the size and location of the nevus. Large birth marks of this type are best left alone. Roentgen-ray and radium therapy are not recommended, as the large doses necessary to produce possible results will eventually cause serious sequelae with questionable improvement of the birth mark in the interim. When the mark is near the eye, the method of treatment should be elected with a view to avoiding any deformity from a resultant contracting scar; the particular treatment of choice for the patient in question would seem to be the water cooled lamp, the eye being protected to avoid a possible conjunctivitis.

Chronic psoriasis is often a difficult therapeutic problem. In general, measures should be employed which cannot possibly injure the skin, as usually the same measures have to be used repeatedly. In cases in which the ultraviolet ray has failed, application of a 6 per cent crude coal tar ointment to the areas with removal just previous to irradiation is often efficacious; this is the technic of Goeckerman. The water cooled ultraviolet lamp can be used if only a few localized plaques are present.

DERMATITIS DUE TO ANTISEPTICS

To the Editor:—A physician, aged 52, has been bothered for the last two years with rather severe itching of the index and middle fingers of the right hand. He has been doing obstetric work rather extensively in a rural location for the last ten or fifteen years, without the use of gloves. Following a delivery, the condition of his fingers is much aggravated. The fingers are swollen, dry, reddened and scaly, with a glazed appearance when not covered with scales. Several months ago he developed a chancre between these fingers, not diagnosed until secondaries appeared. Since then he has used gloves, and under rigid antisyphilitic treatment the Wassermann reaction has become negative. The fingers, however, continue to itch and remain unaffected by all local treatment. Do you think that the condition is caused by the vaginal secretion, and what would be your plan of treatment? Please omit name.

M.D., Tennessee.

ANSWER.—The description fits in with the clinical picture of a local dermatitis due to the antiseptics used in obstetric practice; e. g., compound solution of cresol, formaldehyde or mercuric chloride. The condition is probably not caused by the vaginal secretion, although the possibility of its being a mycotic dermatitis due to yeast infection must be considered. The plan of treatment would be to avoid contact with or exposure to the antiseptics mentioned, to use gloves, to avoid using soap and water on the affected areas, and to apply locally some bland ointment. Roentgen-ray therapy might also be helpful.

POSSIBLE AIR IN ABDOMINAL CAVITY COMING THROUGH FALLOPIAN TUBES

To the Editor:—I had a patient recently with a duodenal ulcer and a ruptured ectopic (tubal) pregnancy. There was free air in the peritoneal cavity, as evidenced by obliteration of liver dulness but no rigidity of the abdominal wall. I was of the opinion that it was a pin point perforation because of lack of peritoneal irritation. Is it possible that the air might have escaped from the fallopian tube which was admitted through patulous openings communicating through the genital passage to the vulva? There had been some decidua expelled externally.

THOMAS I. O'DRAIN, M.D., Philadelphia.

ANSWER.—It is highly improbable that air may enter the peritoneal cavity spontaneously through the genital tract. It may be forced through the fallopian tubes under moderate or slight pressure (40 mm.) as in the patency test, provided the tubes are normal and that the cervix is obturated. It is possible that this may occur also during the process of dilation of the uterine canal by means of Hegar's graduated dilators, the latter

acting like the piston of a syringe. However, in case of pregnancy—either uterine or ectopic—the decidua closes the uterine cornua, thus precluding tubal patency.

Free gas in the peritoneal cavity which appears spontaneously is prima facie evidence of a perforation somewhere in the gastrointestinal tract. This is most frequent after gastric or duodenal ulcer, but it has also been observed in ulcers of the intestine, especially tuberculous ulcers, and also in subphrenic abscess following gangrenous appendicitis with rupture. The presence of gas in the peritoneal cavity is recognized by x-ray examination, a typical area of transparency appearing between the liver and the diaphragm when the patient is upright.

SKIN CONDITIONS CONCERNED UNDER IMMIGRATION LAWS

To the Editor:—What are the skin conditions which might prevent an alien from gaining admittance into the United States?

PATTERSON M. MENDLOWITZ, M.D., McKeesport, Pa.

ANSWER.—The regulations governing the medical inspection of aliens, administered by the Public Health Service and based on the immigration laws, require the certification and exclusion of "persons afflicted with a loathsome or dangerous contagious disease." The regulations do not attempt to make a list of all the skin diseases that would be included in the foregoing, but, as examples, the following diseases of the skin are enumerated as coming within the excluded classes:

Favus	Mycetoma
Ringworm	Leprosy
Sycosis barbae	Leishmaniasis (cutaneous)
Actinomycosis	Syphilis
Blastomycosis	Lupus (tuberculosis of skin)
Frambesia	Trachoma

Persons with skin diseases which may be classed as loathsome or contagious, which are essentially acute in character, are usually held in quarantine at the port of arrival pending recovery, following which the diseases then cease to constitute a cause of exclusion. It will be seen from those enumerated that the essentially chronic type of loathsome or contagious skin diseases are particularly excluded.

TREATMENT OF MALARIA

To the Editor:—Is there any time when chills and fever or fever due to malaria cannot be cured by a standard malarial treatment, that is, 30 grains (2 Gm.) of quinine a day for five days, and 5 grains (0.3 Gm.) daily thereafter for six weeks? Does the taking of quinine in insufficient doses tend to accommodate the malaria parasite to the effect of quinine to such a degree that the condition cannot be cured by a standard malarial treatment?

W. E. WILSON, M.D., Dadeville, Ala.

ANSWER.—There is probably no time when the chills and fever produced by malaria may not be cured by quinine. It is probably best to follow the standard treatment as recommended in the report of the National Malaria Committee (1918); namely, to give adults 0.65 Gm. (10 grains) of quinine sulphate by mouth three times daily for three or four days, followed by 0.65 Gm. every night on retiring for eight weeks. Under this treatment it is estimated that 90 per cent of all cases of malaria will be cured; if 0.65 Gm. daily are continued for fifteen weeks, approximately 100 per cent of cases will be cured.

It is safe to say that chills and fever that do not respond to this treatment are not due to malaria.

It has not been definitely established whether or not substandard doses of quinine tend to make the disease refractory to quinine.

TREATMENT OF MYELOGENOUS LEUKEMIA

To the Editor:—Has myelogenous leukemia ever been known to be cured? What treatment would you advise? Kindly omit name.

Brooklyn.

ANSWER.—Alleged cures in cases of myelogenous leukemia have been reported, but in all cases there is the suspicion that they were not true cases of leukemia but instances of evanescent lymphocytosis. Myelogenous leukemia in the light of therapeutic results is a fatal disease, in the acute cases death occurring within a few months, while, with the chronic form, carefully observed cases lasting ten years are on record.

The treatment largely concerns itself with radium and the roentgen ray. The method used by Dr. Francis Carter Wood consists in the use of a screen composed of 2 mm. of lead and a layer of gauze 3 cm. thick, so that the alpha and soft beta rays are filtered out. The splenic region is mapped out into areas about 10 cm. square, and radium (130 mg.) is applied to these in succession, the total time of exposure averaging twenty-four hours, or an equivalent of 3,000 mg. hours. In some instances the long bones and enlarged glands also are treated.

Application of the roentgen ray to the spleen, glands and bones has been very successful especially when the dose has been accurately determined, as described by Stengel and Pancoast (THE JOURNAL, April 25, 1908, p. 1317). Frequency of treatment is another important factor and should be controlled by repeated leukocyte determinations, which should not be depressed below 20,000. Frequent platelet counts are advised to estimate the effect on the bone marrow. The intravenous use of thorium x is dangerous and has no advantages over radium. Transfusions influence the anemia temporarily and lessen the tendency to hemorrhages. Splenectomy is dangerous and seemingly has no beneficial effect with the exception of relieving the discomfort attending the large splenic tumor.

Of the drugs, arsenic by mouth, or intravenously in the form of sodium cacodylate, and benzene, from 0.3 to 0.6 (5 to 10 minims) in capsules two or three times daily with an equal amount of olive oil are recommended, as they cause the leukocytes to diminish.

Complications, as hemorrhage and oral sepsis, are treated as they arise.

STATISTICS OF SPINAL ANESTHESIA

To the Editor:—Will you please send us any available statistics as to the mortality of spinal anesthesia? Also, what is the comparative mortality between chloroform, ether, nitrous oxide and ethylene? Please give causes of death from spinal anesthesia.

BESSESEN CLINIC, Minneapolis.

ANSWER.—A careful analysis of deaths following spinal anesthesia reveals that most of them seem avoidable if proper drugs and dosage are used and if correct technic and indications are observed. The literature records many deaths following spinal anesthesia with cocaine. Stovaine has been shown to cause permanent injury in the cord, particularly since the studies of Spielmeyer (*München. med. Wchnschr.* **55**:1629, 1908) have drawn attention to the degenerative changes in the large polygonal motor cells. Procaine (procaine hydrochloride, U. S. P., maximal dose, 3 cc. of a 5 per cent solution) is one of the safest drugs at the present time. The attempt to anesthetize dorsal segments either by a high spinal puncture or by extreme postural measures has proved to be a dangerous practice. A Trendelenburg position may be employed but only after the anesthesia in the lower extremity has appeared, indicating that the drug is fixed to the lumbar segments.

Deaths may occur during the anesthesia in the form of a respiratory paralysis; in other cases vasomotor paralysis sets in. The use of ephedrine to combat the frequent fall in blood pressure seems worth while (Sis, F. L.: *S. Clin. N. Amer.* **8**:195 [Feb.] 1928). Death may also occur several days after the operation as a result of meningitis or myelitis. The infection can be carried in either with the needle or with the solution, but it has been also reported in the presence of generalized infection, which tends to localize at the site of lumbar puncture.

It can be seen that the mortality statistics of spinal anesthesia do not mean much unless one can be sure that the factors mentioned, and furthermore the preoperative states of the patient and the surgical trauma itself, can be excluded as the cause of death. Strauss, in his joint statistics covering 83,698 spinal anesthesias, calculated one death to every 5,978 spinal anesthesias, or 0.016 per cent (*Deutsche Ztschr. f. Chir.* **172**:296, 1922). Garré and Borchard (Lehrbuch der Chirurgie, Leipzig, F. C. Vogal, 1921) expect three deaths during and another three following every 10,000 spinal anesthesias (0.06 per cent). Several gynecologists, including von Jascke and Franz, report mortalities of from 0.06 to 0.14 per cent. Some of the deaths occurred in women over 75, submitted to a radical hysterectomy for carcinoma of the uterus, operations lasting well over an hour. These cases are included in the spinal deaths.

Comparative mortality statistics between chloroform and ether are numerous. Neuber has calculated for chloroform a death rate of 1:2,060; for ether, a rate of 1:5,930, and for an ether chloroform mixture, a mortality of 1:3,410. The late injury to the heart, kidneys and particularly the liver could not be estimated until more recently. The dye test of Rosenthal for liver function shows a dye retention not only after chloroform but also after ether anesthesia.

The estimation of deaths due to nitrous oxide is even more difficult. The usual calculations of 1:1,000,000 as the death rate are contradicted by Gatch, who gives 1:833. J. F. Baldwin believes that there were at least 1,000 deaths in the United States during the last ten years. Because of the unestimatable number of nitrous oxide anesthesias given in physicians' and dentists' offices day after day and because of the unknown number of unpublished deaths, it is impossible to get even an approximate idea of the actual death rate. All one can say is that nitrous oxide administered in hospitals by a trained

anesthetist has probably a negligible death rate. Many dental anesthetists have had 100,000 anesthesias without a mortality (*Anesth. & Analg.* **6**:116 [June] 1927).

Ethylene is stated to be superior to nitrous oxide in that it produces better relaxation and that more oxygen can be given with it. Reports of explosions and of a death due to carbon monoxide impurity are on record. Safety measures against explosions and rigid standards of purity make ethylene a safe anesthetic. Some deaths following thyroidectomy have been attributed to ethylene. It has been suggested by Luckhardt (*Anesth. & Analg.* **7**:12 [Jan.] 1928) that the preoperative iodine management may perhaps account for a toxic combination of ethylene and iodine.

Late pulmonary complications of all inhalation anesthetics, such as pulmonary abscess, which may cause the patient's death months or years later, are of course never included in the mortality statistics. No one anesthetic is perfectly harmless. The experience and judgment of the surgeon and the anesthetist can never be standardized, and is the most important factor in the safety of any anesthetic.

TREATMENT OF TORTICOLLIS

To the Editor:—Do you know of any treatment that has been developed recently for the relief of torticollis? A very marked torticollis in a man, aged 67, of about one and a half years' duration, followed a series of furuncles on the neck and long exposure to air while riding in an automobile. For the first two or three months the condition was spasmodic in nature and very painful. Since that time it has become fixed, though for the past few weeks there has been a recurrence of this spasmodic condition at night. Can you give any advice as to the treatment of this condition?

A. D. LAZENBY, M.D., Baltimore.

ANSWER.—This is evidently a case of osteomyelitis of the cervical spine, tuberculosis of the cervical spine or a spasmodic torticollis in the nature of a wry neck.

Suggestions for treatment: 1. Recumbency in bed with the head of the bed elevated 6 or 8 inches. 2. Application of head traction by means of a canvas halter with a suspended weight of 5 or 6 pounds. 3. Application of a plaster-of-paris cast. 4. A brace. Roentgenograms should be made of the cervical spine and a diagnosis made before treatment can be outlined.

EFFECTS OF INBREEDING BY CONSANGUINEOUS MARRIAGE

To the Editor:—Here is a problem I wish you would solve for me, and advise me as to the probable or possible outcome: Mr. A marries and has a son. Mrs. B marries and has a daughter, and this daughter has a daughter. Mr. A and Mrs. B are brother and sister. Now this granddaughter of Mrs. B and son of Mr. A want to get married. Would you advise against this marriage? What are the chances of the children of this union being normal or abnormal?

M.D., New Jersey.

ANSWER.—The marriage contemplated is about equivalent to a second cousin mating. The effects of inbreeding depend on whether there are in the stocks involved inferior traits that might be intensified by coming in from both parents. In general, if there is insanity or other serious detrimental traits in the common stock of the prospective mates, marriage would be unwise. Otherwise there seems to be no sound biologic argument against it.

CHLORINE IN DRINKING WATER

To the Editor:—What are the bad effects, if any, of chlorine in drinking water, say five times more than the amount needed to sterilize it? What is the proper amount of chlorine as used by the Wallace and Tiernan machine?

M. A. MOORE, M.D., Kingston, W. Va.

To the Editor:—Is the prolonged use of Dakin's solution as a beverage harmful? The chlorine content of the water used for drinking purposes in this town (Eagle Pass, Texas) is high. What should be the percentage of chlorine in drinking water? The nearest possible source of contamination of the water supply of the town is 58 miles distant. If there is a fairly simple, fairly accurate method of estimating the amount of chlorine in water, please give it.

J. J. HORTON, M.D., Eagle Pass, Texas.

ANSWER.—There is no reason to believe that continued consumption of a chlorinated drinking water is harmful. A water supply should be dosed with sufficient chlorine to leave a slight residual amount. This should ordinarily be about 0.1 part of chlorine per million parts of water. The dosage of chlorine necessary to give this result will vary with the character of the water. The usual range is from 0.15 part to 0.75 part of chlorine per million parts of water. In exceptional cases larger doses must be used. If the water is so badly contaminated that very large doses of chlorine are required, it is advisable to filter the water before dosing. Chlorine can be readily detected in small amounts by the orthotolidin test. Test outfits with standards are obtainable.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. Harry C. DeVighne, Juneau.
PORTO RICO: San Juan, Sept. 4. Sec., Dr. D. A. Biascoechea, Box 804, San Juan.

Vermont March Examination

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, March 21-23, 1928. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Four physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Toronto Faculty of Medicine		(1922)	84
University of Paris, France		(1927)	76.1, 77.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tufts College Medical School		(1900)	Mass.
University of Nebraska College of Medicine		(1927)	Nebraska
Columbia University College of Phys. and Surgeons		(1896)	New York
University of Pennsylvania School of Medicine		(1893)	Penna.

Illinois April Examination

Mr. V. C. Michels, superintendent of registration in the Department of Registration and Education in Illinois, reports the written and practical examination held at Chicago, April 17-19, 1928. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 73 candidates examined, 63 passed and 10 failed. Eighteen physicians were licensed by reciprocity and one by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1927)	85.3
Chicago College of Medicine and Surgery		(1916)	75
Chicago Medical School		(1927) 76 (1928) 75*,	78, 80
Northwestern University Medical School		(1927) 78, (1928)	81, 83
Rush Medical College		(1926) 82, (1927) 75,	76, 77, 81, 83, 85, (1928) 75, 79, 80, 80, 80, 81, 81, 81, 81, 81, 81, 81.3, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 85, 86, 86, 86, 87, 88, 89
University of Illinois College of Med.		(1927) 77 (1928, 77, 80,	81, 89
Eclectic Medical College		(1927)	77
Jefferson Medical College of Philadelphia		(1924)	77
University of Pittsburgh School of Medicine		(1926)	83
Dalhousie University Faculty of Medicine		(1927)	83
University of Toronto Faculty of Medicine		(1920)	79
McGill University Faculty of Medicine		(1919)	83
University of Konigsberg, Germany		(1913)	75
University of Munchen, Germany		(1917)	83

College	FAILED	Year Grad.	Number Failed
University of Georgia Medical Department		(1912)	64.5
Chicago Medical School		(1927)	71.7
University of Illinois College of Medicine		(1928)†	70.7
Miami Medical College		(1903)	72.1
Christian Albrecht Univ., Kiel, Germany		(1923)	67
University of Munich, Germany		(1923)	70.6
University of Athens, Greece		(1923)	51.2
Dragomanov Institute, Kief, Russia		(1917)‡	50.4
University of Odessa, Russia		(1922)‡	55
University of Kharkov, Russia		(1916)‡	68

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1900) Iowa (1927	Ohio
Indiana University School of Medicine		(1926)	Indiana
State Univ. of Iowa College of Medicine		(1921) Iowa (1922)	Iowa (2)
University of Michigan Medical School		(1909) (1924)	Michigan
St. Louis College of Physicians and Surgeons		(1911)	New Mexico
St. Louis University School of Medicine		(1913) (1926)	Missouri
Syracuse University College of Medicine		(1926)	New York
Woman's Medical College of Pennsylvania		(1911)	Maryland
Vanderbilt University School of Medicine		(1925)	Tennessee
Medical College of Virginia		(1925)	Virginia
Marquette University School of Medicine		(1927)	Wisconsin
University of Manitoba Faculty of Medicine		(1925)	Wisconsin
University of Palermo, Italy		(1919)‡	W.Virginia

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Northwestern University Medical School		(1927)	U. S. Navy

* Not a graduate until July 25, 1928.
† Not a graduate until July 1, 1928
‡ Verification of graduation in process.

Book Notices

ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1927 WITH THE COMMENTS THAT HAVE APPEARED IN THE JOURNAL. Cloth. Price, $1. Pp. 103. Chicago: American Medical Association, 1928.

A glance at the index of this volume gives an instructive cross-section of the work of the Council with products which for one reason or another have not been found acceptable for inclusion in New and Nonofficial Remedies. Here are preliminary reports on products which appear to have promise but for which sufficient evidence is not yet presented to justify recognition by the Council. This class is represented by Blueberry Leaf Extract, which gives promise of being useful in the treatment of diabetes; "Plasmoquin," a substitute for quinine in the treatment of malaria, brought out in Germany but thus far withheld from the market by the American agent; "Alpha-Lobeline," which has been the subject of many conflicting estimates but which lacks conclusive evidence demonstrating its usefulness; and Bismarsen, a new derivative of arsphenamine, containing bismuth and proposed for use in the treatment of syphilis.

The class of unacceptable preparations which have been definitely rejected for conflict with the principles which govern the Council in the recognition of products is represented among others by Bismogenol, which is bismuth salicylate under a fancy name; Desitin, a complex mixture from Germany; Hexol, a pine oil preparation for which unwarranted claims are made; Warnink's Advocaat, a mixture of potassium arsenite and alcohol in the form of an egg nog, marketed without emphasis of the arsenic content in such a way as to lead to its harmful and ill advised use by the public; and Solvo-Aspirin, another futile attempt to market a solution containing acetylsalicylic acid rendered soluble by addition of sodium bicarbonate.

In addition to its other activities, the Council frequently investigates and reports on subjects that involve a contribution to the advance of general medical knowledge. Such a report in the present volume is Dr. R. A. Hatcher's admirable review of the literature on the Gwathmey method of colonic anesthesia and his evaluation of the present standing and usefulness of this much discussed procedure.

DIE KLINISCHE HÄMATOLOGIE DES KINDESALTERS. Von Heinrich Baar, Assistent des St. Annaspitals in Wien, und Eugen Stransky, gew. Assistent der Reichsanstalt für Mutter- und Säuglingsfürsorge in Wien. Paper. Price, 32 marks. Pp. 506, with 20 illustrations. Leipzig: Franz Deuticke, 1928.

This is a comprehensive treatise on the physiologic and pathologic changes of the blood, particularly as they relate to infants and children. The discussion of the blood of the newborn forms an interesting and instructive chapter. The anemias of infancy and childhood are intelligently classified. Particular attention is given to anemia in the new-born and in early infancy. The rôle played by syphilis, malaria and infantile leishmaniosis is thoughtfully considered. The authors discuss at some length the anemias produced by lead and worms, as well as constitutional disturbances. The treatment of the various types of anemia receives careful attention. The authors evaluate the use of drugs and foods, as well as the various iron preparations, and conclude that the old-fashioned tincture of ferric chloride is not equaled or excelled by the more modern preparations. The dietetic treatment of the anemias of young life is of the greatest importance. The indications and technic for transfusion are mentioned and the importance and technic of blood grouping are given in detail. The exsanguination method of transfusion in septic conditions is critically discussed. The authors consider leukemia due to septic factors. A number of cases of acute leukemia in childhood with pathologic and histologic studies are reported. Lymphogranulomatosis, or Hodgkin's disease, is studied in some detail, because, as the author says, it occurs with relative frequency in early life. Stransky, who writes this chapter, discusses the clinical course of the disease and points out the frequent occurrence of eosinophilia in the blood picture. The variable temperature curve of this disease is described and the Pel-Ebstein type is considered at some length. Splenic enlargement is discussed in a separate chapter. The relation of splenomegaly to alteration in the blood picture receives careful attention, and the splenohepatomegaly (Niemann-Pick) is clearly described and illustrated with photomicrographs. Blood clotting time and bleeding time, and capillary resistance are discussed from the standpoint of their significance and their technic. The modern theories of blood coagulation, as well as hemophilia and its relation to its hereditary origin and its clinical aspects, come in for a considerable share of attention. The purpuras are considered in detail and the classification of Lehndorff is adhered to. In discussing the treatment of the hemorrhagic conditions, the authors consider the use of calcium, hypertonic salt solution, serum therapy, foreign protein therapy, injections of platelet extracts, and the surgical procedures of splenectomy and blood transfusion. The book contains a valuable mass of information which has been assembled from an extensive literature and presents the most recent knowledge of this important subject. The authors have done well by furnishing a comprehensive survey of a vital subject.

A MANUAL OF THE PRACTICE OF MEDICINE. Prepared Especially for Students. By A. A. Stevens, A.M., M.D., Professor of Applied Therapeutics in the University of Pennsylvania. Twelfth edition. Cloth. Price, $3.50 net. Pp. 657, with 16 illustrations. Philadelphia: W. B. Saunders Company, 1928.

Certain books are familiar to nearly every American medical student. Many generations of medical students, present or past, can meet on the common ground of a few famous volumes on anatomy, physiology, pharmacology and "practice." One of these books is Stevens' little "Manual," prepared especially for students, but a real book—not a compend. The twelfth edition follows the preceding edition after four years.

DIE CHIRURGIE. Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner, und Prof. Dr. O. Nordmann, Lieferung 22. Band II., Teil 1. Chirurgie der Haut und des Unterhautzellgewebes. Von Dr. Fr. Ascher. Paper. Price, 22 marks. Pp. 603-866, with 75 illustrations. Berlin: Urban & Schwarzenberg, 1928.

This section, written by Dr. Friederich Ascher, deals with the surgery of the skin and subcutaneous tissues. As the actual steps of any given operation for the cases described have been mentioned in the section on plastic or oral surgery or in some other section, the book is devoted mainly to descriptions of the disease itself. These descriptions are in the same thorough manner that has typified the rest of the work. This section is especially beautifully illustrated, containing many color plates of many of the conditions described. This section of Die Chirurgie should appeal not only to surgeons but to the general practitioner and the dermatologist as well.

NEW AND NONOFFICIAL REMEDIES, 1928. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1928. Cloth. Price, $1.50. Pp. 489. Chicago: American Medical Association, 1928.

To avoid the Scylla of overenthusiasm and yet miss the Charybdis of a hypercritical and overconservative attitude in judging new work of any kind is always difficult. Since it first started its commendable work of aiding the medical profession by passing upon the merits of the host of new remedies each year, the Council on Pharmacy and Chemistry has demonstrated by its combination of professional conservatism and scholarly openmindedness that it is a safe and indispensable guide to the physician who prescribes new and unofficial drugs. Each year the appearance of New and Nonofficial Remedies confirms this statement. This year's volume is well up to the standards of scientific and editorial excellence established by previous volumes.

The book is conveniently arranged for reference: each preparation is classified, and each classification is preceded by an authoritative and up-to-date discussion of the composition, actions, uses and dosage of the medicament involved. Annually the book is carefully scrutinized and revised to insure its being in the forefront of medical progress. Products that have been admitted are reexamined at stated intervals to determine if they are keeping their promise of therapeutic usefulness; and new products are admitted as they are found acceptable.

Among the more important revisions this year are: the rewriting or recasting of the chapters on medicinal foods, insulin, arsenic compounds, and iron and iron compounds; revision of

the chapters on ovary and parathyroid to make them conform to the results of recent research; and revision of the names and standards of the acriflavine dyes. A noteworthy omission is that of all parathyroid gland preparations designed for oral administration because of their lack of efficacy by this route.

Some of the products which have been recognized during the past year and which are now included in the book are: neonal, a new barbital compound; mesurol, a bismuth preparation for use in the treatment of syphilis; bromural, once omitted from the book but now reinstated as a result of the manufacturer's limitation of therapeutic claims; a number of standardized cod liver oils; ephedrine, an alkaloid with epinephrine-like properties, and its hydrochloride and sulphate salts; amiodoxyl benzoate, the ammonium salt of orthoiodoxybenzoic acid, proposed for the treatment of arthritis; crotalus antitoxin, an antisnakebite serum; several brands of erysipelas streptococcus antitoxin; and anaerobic antitoxin, an antitoxic serum for use against gas gangrene.

On account of the careful revisions and the current additions, New and Nonofficial Remedies is essentially a new book each year, indispensable to the physician who would keep up with the march of therapeutic progress.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 1. Band I. Ueberblick über die geschichtliche Entwicklung der Lehre von der Infektion, Immunität und Prophylaxe. Von Prof. Dr. L. Abel. Allgemeine Morphologie und Biologie der pathogenen Mikroorganismen. Von Prof. Dr. E. Gotschlich. Third edition. Paper. Price, 13.20 marks. Pp. 160, with 6 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 3. Band IV. Pest. Von Prof. Dr. A. Dieudonné, und Prof. Dr. R. Otto. Third edition. Paper. Price, 19.50 marks. Pp. 179-412, with 44 illustrations. Jena: Gustav Fischer, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 4. Band VI. Rotz. Von Prof. Dr. E. Lührs.—Bacillus pyocyaneus. Von Prof. Dr. A. Lode. Third edition. Paper. Price, 13 marks. Pp. 183, with illustrations. Jena: Gustav Fischer, 1927.

Many of the articles appearing in the third edition of this standard treatise are, like the one on cholera previously noted, by the same authors and are handled in the same way as in the second edition. The article on plague by Dieudonné and Otto is of this type, the changes being in most instances slight and confined to slight alterations in words, phrases and general arrangement. The article by Gotschlich on the general morphology and pathology of pathogenic micro-organisms, begun in the first lieferung and concluded in the twelfth, is on the other hand considerably altered and contains much new and valuable material. As in the previous edition, Gotschlich's article is one of the best in the handbook. There is also an excellent new article on the bacteriophage, by Otto and Munter. Every section of this valuable work contains material which makes access to it indispensable for the student of infectious disease.

ANTHELMINTICS AND THEIR USES IN MEDICAL AND VETERINARY PRACTICE. By R. N. Chopra, M.A., M.D., Professor of Pharmacology, Calcutta School of Tropical Medicine and Hygiene, and Asa C. Chandler, M.Sc., Ph.D., Professor of Biology, Rice Institute, Houston, Texas. Cloth. Price, $5. Pp. 291. Baltimore: Williams & Wilkins Company, 1928.

A science or an art cannot afford to drift too far afield from common things. In one generation an almost scienceless art of medicine, which nevertheless was doing its utmost in the field of treatment, has passed into a period of investigation and now, enlightened, is eagerly attacking the ordinary problems of therapy. Accordingly, questions as to real value in disease of heat, of cold, of food, of water are of major interest. Recently, almost simultaneously have come the announcements of two efforts to approach effectively the ancient affliction of worms. One of these efforts, the program of the American Child Health Association, was described in THE JOURNAL, June 30, 1928; the other is the present volume on drugs. For some reason, although the oldest recognized parasitic organisms are worms, and although "worm medicines" and "worm cakes" have been ordered with the groceries in many households, no one heretofore has thought to collect the scientific information about anthelmintics. The effort of Chopra and Chandler, therefore, not only is timely and successful but also must have been greatly laborious. Employing the widely scattered literature and their own experience in pharmacology and helminthology they have produced a book which, the authors hope, "will be helpful to the general practitioner in giving him fairly complete and comprehensive information on a subject in which he is, as a rule, only incidentally interested." In the near future there may be reason to modify the view expressed in the latter part of this sentence. With the recently stimulated interest in helminthic infestation of adults and children living in the temperature zones, the interest of the general practitioner in the subject may become more than incidental. If so, these recent studies will be of considerable practical value.

ERBLICHKEIT UND NERVENLEIDEN. Von Dr. F. Kehrer, o. ö. Professor, Direktor der Psychiatrischen- und Nervenklinik Münster i. W. I. Ursachen und Erblichkeitskreis von Chorea, Myoklonie und Athetose. Paper. Price, 18 marks. Pp. 136, with 60 illustrations. Berlin: Julius Springer, 1928.

This is number 50 of the excellent neurologic and psychiatric monographs edited by Foerster and Wilmanns. It embodies a profound study of the hereditary and acquired factors in both Sydenham's chorea and Huntington's chorea, and the relationship of both to other affections, particularly syphilis, rheumatism, migraine and epilepsy. It appears that hereditary factors, especially a tendency to migraine, are more important in simple Sydenham's chorea than is generally supposed, and that the variety of neuroses interrelated and encountered in these families is greater than we are generally aware of.

DISEASES OF THE INTESTINES, INCLUDING THE LIVER, GALL-BLADDER, PANCREAS AND LOWER ALIMENTARY TRACT. By Anthony Bassler, M.D., F.A.C.P., Consulting Gastroenterologist, St. Vincent's, Peoples and Jewish Memorial Hospitals, New York City. Third edition. Cloth. Price, $9 net. Pp. 905, with 304 illustrations. Philadelphia: F. A. Davis Company, 1928.

This is a great improvement over previous editions. The chapters on anatomy, physiology and methods of examination are practically the same. Cholecystography is well described. The criticism previously expressed of the subject of intestinal intoxication and stasis still holds good. One often wonders whether there is enough to the subject to warrant such extensive discussion. After all, however, this is an open question. The subjects of diseases of the liver, biliary tracts and pancreas are new and well described. It is refreshing to note that Dr. Bassler does not favor many of the irrigation systems that others recommend so carelessly. It may be easy for the author to make a diagnosis of pancreatic disease from the clinical history and the laboratory observations, but to the majority of physicians it seems that such a diagnosis is less simple than it appears. Laboratory methods of diagnosis are stressed throughout. The volume is well illustrated and well printed and there is an extensive bibliography.

STRUCTURE DES MUSCLES STRIÉS. Étude microcinématographique des contractions normales et atypiques des muscles et du myocarde. Par R. Lutembacher. Paper. Price, 45 francs. Pp. 156, with 103 illustrations. Paris: Masson & Cie, 1928.

The author discusses the difficulty of interpreting the structural changes that take place in contractile tissues on the basis of examinations of fixed preparations. He therefore employed living larvae of chironomes for his microscopic studies. In the first part of the book he describes the structure and optical properties of striated muscle fibers illuminated by natural and also by polarized light. The second part is devoted to an analysis of the changes in muscle fibers during normal and pathologic contractions as observed by means of microcinematography. The book is profusely illustrated and should be of value to those who are interested in the anatomy, physiology and pathology of contractile tissues.

BOLLES LEE'S MICROTOMIST'S VADE-MECUM. A Handbook of the Methods of Microscopic Anatomy. Edited by J. Brontë Gatenby, M.A., Ph.D., B.A., Professor of Zoology and Comparative Anatomy, Dublin University, and E. V. Cowdry, M.A., Ph.D., Rockefeller Institute for Medical Research, New York City. Ninth edition. Cloth. Price, $7.50. Pp. 710, with 9 illustrations. Philadelphia: P. Blakiston's Son & Company, 1928.

Those who are familiar with methods of microscopic anatomy will be familiar with this book. The last previous edition was published in 1921. The present edition has been enlarged, especially the embryologic, cytologic, protozoological and entomologic sections, and there are new sections by Dr. Robert Chambers and Dr. W. R. G. Atkins. Dr. Helen Pixell-Goodrich rewrote the protozoological section when it was found

that Dr. A. Drew was unable to revise it, and Dr. J. G. Greenfield has finished the work on the nervous system which was interrupted by the untimely death of Dr. C. DaFano.

ACUTE APLASTIC ANÆMIA: Its Relation to a Liver Hormone. Report and Observations on Case Treated by Injections of Liver Extract. By A. Hayes Smith. With pathological details of the case by C. J. Young. Boards. Price, 6/-. Pp. 80, with illustrations. London: H. K. Lewis & Company, 1928.

This is the report of a case of what the author regards as acute aplastic anemia in a child whose improvement and seeming recovery are ascribed to the use of liver extract. Dr. Smith advances the theory that, contrary to the general view that the bone marrow is a complete organ, direct injury of which may, if extreme, result in aplasia, the marrow is really a subsidiary organ whose activity depends on "a powerful hormone produced in the liver, this hormone keeping the bone marrow in a state of functional tone, and absence of this hormone producing aplasia or death of the marrow. . . . The beneficial effects of liver feeding in pernicious anemia would on this hypothesis be due to absorption of small amounts of this hormone from the digestive tract." The case is reported in detail; the differential diagnosis is considered; other pertinent cases are cited, and evidence is brought forward to support the thesis stated as to the presence of a liver hormone and its relation to the bone marrow. Whether the author proves his point must be left to the judgment of those who critically examine his case report. Some may question his statement that there was "no multiplicity of treatment" when they read that in addition to the liver extract there were used at various times rhubarb and soda, hemostyl, red bone marrow, strepto yatren (Behring), kaylene-ol, bemax, ostelin, antipyogenes yatren vaccine, radio-malt (vitamin A plus), agar-agar, detoxicated coryza and streptococcal vaccines, calomel, detoxicated streptococcal vaccine, voluntal, expectorant mixture, autogenous vaccine, and lactic acid milk. Quite definite results were noted from the use of some of these agents but the liver extract is considered as the one leading to the improvement, which is attributed to its hormone content. A warning is uttered against overdosing; i. e., against oversupplying the absent substance (the hormone) in too large amount. Toxic symptoms might thus be induced as they are in cases in which thyroid substance is too freely given. While the experiment cannot be looked on as having been performed under ideal conditions as to control, and while the author is too prone to see after the use of drugs what he had hoped to see, his suggestions may well be in the minds of those treating similar cases, so that his theory may be confirmed or disproved.

LE SYNDROME MALIN DANS LES MALADIES DE L'ENFANCE. Par V. Hutinel, professeur honoraire de clinique médicale infantile. Aperçu de clinique et de pathologie générale infantile. Paper. Price, 32 francs. Pp. 308, with illustrations. Paris: Masson & Cie, 1927.

In this monograph Hutinel has postulated a symptom complex to which he has given the name malignant syndrome. In the first chapter he provides a clinical summary of malignant types of erythemas in typhoid and in the infectious erythemas, such as those following or associated with measles, scarlet fever, diphtheria and anginas. In the second chapter he discusses diseases of specific systems, in which similar symptoms are found, such as infections of the bronchi, severe enterocolitis and nutritional disturbances, and the intolerance for milk and other foods exhibited by some infants, which he explains on an anaphylactic basis. In the discussion of the malignant types of scarlet fever, he points out that hemorrhages into the suprarenal capsule may be the pathologic basis for the fulminating rapidly fatal types of this disease. The author considers the possibility of pathologic change in the other endocrine glands, the myocardium, the skin, the brain and the meninges. He also indicates the part played by fluid equilibrium and anaphylactic phenomena in the malignant forms of these infections. The final chapter is a summary of the results obtained in prophylaxis of these various infections in thirty years' experience. The work is a commendable attempt to group together and explain on a pathologic and physicochemical basis a series of similar malignant forms encountered in various infectious diseases, by a clinician whose years of experience and keen observation have shown him a light which we hope will some day be completely explained for us.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

PHYSIOLOGY AND BIOCHEMISTRY OF BACTERIA. Volume I—Growth Phases; Composition, and Biophysical Chemistry of Bacteria and Their Environment; and Energetics. By R. E. Buchanan, Ph.D., Dean of the Graduate School, Iowa State College, and Ellis I. Fulmer, Ph.D., Professor of Biophysical Chemistry, Department of Chemistry, Iowa State College. Cloth. Price, $7.50. Pp. 516, with 78 illustrations. Baltimore: Williams & Wilkins Company, 1928.

First volume of an American system of bacteriology.

PRAKTISCHE DIFFERENTIALDIAGNOSTIK FÜR ÄRZTE UND STUDIERENDE. Herausgegeben von Professor Dr. Georg Honigmann. Band V. Differentialdiagnose in der Frauenheilkunde. Von Dr. med. A. Seitz, a. o. Professor und Oberarzt der Frauenklinik an der Universität Giessen. Paper. Price, 15 marks. Pp. 236, with 28 illustrations. Dresden: Theodor Steinkopff, 1928.

Brief manual on differential diagnosis of diseases of women constituting part of a German system of differential diagnosis.

KLINISCHE LABORATORIUMSTECHNIK. Herausgegeben von Prof. Dr. Theodor Brugsch, Direktor der medizinischen Klinik Halle a. S., und Prof. Dr. Alfred Schittenhelm, Direktor der medizinischen Klinik Kiel. III. Band. Von K. Beckmann, P. Bohnen, M. Bürger, usw. Second edition. Paper. Price, 32 marks. Pp. 1449-2100, with 144 illustrations. Berlin: Urban & Schwarzenberg, 1928.

Third volume in Brugsch's massive guide to laboratory technic.

KLINIK UND THERAPIE DER BLUTKRANKHEITEN. Von Prof. Dr. N. Jagić, Professor für innere Medizin an der Universität in Wien, und Dr. G. Spengler, Assistent der medizinischen Abteilung des Sophienspitales in Wien. Paper. Price, 20 marks. Pp. 311, with 14 illustrations. Berlin: Urban & Schwarzenberg, 1928.

Extensive study of diseases of the blood and blood-forming organs.

HAY-FEVER AND ASTHMA: Their Cause, Prevention and Treatment. By Ray M. Balyeat, M.A., M.D., F.A.C.P., Instructor in Medicine and Lecturer on Allergic Diseases in the University of Oklahoma Medical School. Second edition. Cloth. Price, $3.50 net. Pp. 310, with 76 illustrations. Philadelphia: F. A. Davis Company, 1928.

New edition of author's popular handbook.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Lieferung 4. Band I. Herausgegeben von Dr. Max Hirsch. Paper. Price, 27 marks. Pp. 473-708, with illustrations. Leipzig: Curt Kabitzsch, 1928.

Part of a system on endocrine disorders, this section dealing chiefly with suprarenal glands.

URINARY ANALYSIS AND DIAGNOSIS BY MICROSCOPICAL AND CHEMICAL EXAMINATION. By Louis Heitzmann, M.D. Fifth edition. Cloth. Price, $5. Pp. 366, with 131 illustrations. New York: William Wood & Company, 1928.

Guide to technic and interpretation of laboratory investigations of urine.

THE RÔLE OF SCIENTIFIC SOCIETIES IN THE SEVENTEENTH CENTURY. By Martha Ornstein. Cloth. Price, $3. Pp. 308. Chicago: University of Chicago Press, 1928.

The beginnings of scientific organization historically considered.

EAT, DRINK AND BE HEALTHY. An Outline of Rational Dietetics. By Clarence W. Lieb, M.A., M.D. Cloth. Price, $1.50 net. Pp. 180. New York: John Day Company, 1928.

Views—some unorthodox—regarding dietary habits.

THE HEALTH OF WORKERS IN DUSTY TRADES. 1. Health of Workers in a Portland Cement Plant. By L. R. Thompson, Surgeon, Dean K. Brundage, Assistant Statistician, Albert E. Russell, Assistant Surgeon, and J. J. Bloomfield, Assistant Physical Chemist. Public Health Bulletin No. 176. Prepared by Direction of the Surgeon General. Paper. Price, 45 cents. Pp. 138, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1928.

"FIT AND PROPER"? A Study of Legal Adoption in Massachusetts. By Ida R. Parker, Associate Director Research Bureau on Social Case Work. Paper. Pp. 130. Boston: Church Home Society, 1927.

MEDIZINISCHE PRAXIS: Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, leitender Arzt von Dr. Lahmanns Sanatorium Dresden-Weisser Hirsch, Prof. Dr. A. Fromme, leitender

Arzt der chirurgischen Abteilung des Stadtkrankenhauses Friedrichstadt Dresden, und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden. Band III. Das Bronchialasthma. Von Prof. Dr. Felix Klewitz, Oberarzt der medizinischen Universitätsklinik Königsberg i. Pr. Paper. Price, 4.80 marks. Pp. 81. Dresden: Theodor Steinkopff, 1928.

Miscellany

OUR DUTY TO THE RESERVE CORPS*

W. S. THAYER, M.D.
BALTIMORE

In a republic, if there is one right which every citizen should demand— a right, not a privilege—it is that he should be taught to defend and protect himself and his country in time of danger.

If there is one thing for which we should hold our legislative representatives sternly responsible, it is that lack of foresight, that criminal negligence, which leaves us unprepared in time of war.

We are citizens of a republic, but we are slaves of a relentless tyranny—the tyranny of words. A cleverly edited newspaper, a persuasive orator, tell us that we have but to abjure war and the danger is gone; and our reason goes to sleep—children that we are—and we join forthwith in a chorus of halleluiahs over the advent of eternal peace, forgetting that we are but listening to our own words.

Eleven years ago, the call came. Had we been exposed, as were our companions on the other side, nothing could have saved us. The small nucleus of the regular army medical corps was almost completely swallowed by administrative duties. Answering the call, we medical men rushed, untrained, to the colors. We were for the most part wholly unfamiliar with military usage; much time was lost; there were many unnecessary misunderstandings and delays. Thanks largely to General Ireland's patience, judgment and foresight, the emergency was met with surprising skill and efficiency. We had had a long warning. Others were bearing the burden for us and, to our shame, are still paying us for it.

That is not likely to happen again.

Slaves to the tyranny of words, we have allowed the warning of those years to pass unheeded. Our boys are still brought up untrained in self-protection, untaught to honor the flag, and our young physicians are told that if they prepare for military service they are encouraging war.

Comrades, the way to further the cause of peace and good will in this world is just the same as the way to harmony in the medical profession. Meet, associate with, come to know, cooperate with your neighbor. Don't criticize him behind his back. By withdrawing to ourselves, playing our own game, and preaching to our neighbors—no matter how much we preach peace—we are pursuing a dangerous course. Today, as before —eternal children—we preach prophylaxis against bacteria and protozoa and carelessly court danger and destruction at the hands of man, hypnotized by the sound of our own silly words.

Happily, since the days of T. R. of blessed memory, there has been a medical reserve corps which has opened to us physicians the opportunity to do our duty to our country; and I for one am exceedingly proud of having been a member since its beginning.

How any man who served in 1917-1918 can fail to feel the duty to remain in the corps; how any man can fail to feel it his duty to urge his friends and his students to the last man so to do, is beyond my comprehension. It seems to me a responsibility incident to citizenship in a republic.

Mr. President, I am proud to be a member of the reserve corps and of this society, and I hope I shall never be behind hand in doing my duty to help to further its aims.

* Address before the Medical Veterans of the World War, Minneapolis, June 11, 1928.

Medicolegal

Corporation Cannot Practice Through Licensed Person

(Pilger v. City of Paris Dry Goods Co. (Calif.), 261 Pac. R. 328)

The District Court of Appeal of California, first district, division 1, in affirming a judgment of nonsuit, says that this seemed to be a case of first impression, not only in that state, but the question has not, so far as this court was advised, been directly passed on in any jurisdiction. The defendant corporation conducted a department store. The plaintiff employed the services of a chiropodist, whose office was on the second floor of the store building. She was directed to his office by one of the salesmen in the store and had the charge for the treatment charged to her on the books of the store, she having a charge account there. The chiropodist in attempting to remove a callus from the little toe of the plaintiff's left foot cut the toe, which eventually had to be amputated. She sued the defendant for damages.

In order to hold the defendant liable for the negligence of the chiropodist it must be made to appear from the evidence that the relation of master and servant existed at the time of the alleged negligence. The burden of establishing this relationship is on the person asserting it. There was no evidence in the record to show that the defendant operated the chiropody department, or that the chiropodist was in any way employed by the defendant, or that the entries of the charges for such service on the books of the defendant corporation were otherwise than at the request of, and for the convenience of, the plaintiff. The relation of master and servant or employer and employee exists whenever one person stands in such relation to another that the master or employer may control the work of the servant or employee and direct the manner in which it shall be done, and the essential elements are that the master or employer shall have control and direction, not only to the employment to which the contract of employment relates, but to all its details. There was no evidence that the defendant in any manner controlled the work of the chiropodist's business. As a matter of law, the defendant could not direct or control such work, not being a licensed chiropodist as required under the California law, which expressly requires a chiropodist to be licensed after having passed an examination and having pursued a course of study, and which law does not authorize the licensing of a corporation to practice chiropody. The plaintiff must be held to have known the law, and therefore to have known that a department store could not practice chiropody.

The statute, after creating a board of medical examiners, provides that "for the purpose of this act chiropody shall be held to be the medical, mechanical or surgical treatment of the human feet," and that "surgical treatment shall be held to mean the surgical treatment of abnormal nails, corns, callosities, bunions, and other minor foot ailments, not involving the bony structure." The same statute provides that a person, in order to obtain a license as a chiropodist, must have pursued a course of study, and also that any person practicing medicine in California without at the same time possessing a licence issued in accordance with the act shall be guilty of a misdemeanor. A corporation cannot be licensed to practice chiropody, and therefore cannot in contemplation of law be a master over a servant concerning whose acts it could have no power of supervision. The statute requiring an examination as to the qualifications and knowledge of an applicant to practice chiropody and requiring a license from the state board places him, so far as the question of master and servant is concerned, in the same category with lawyers, physicians and dentists, and the authorities seem uniform that a corporation can neither practice nor hire lawyers, physicians or dentists to practice for it. A corporation cannot be held on the theory of master and servant in the case in which injury results to a patient treated by a chiropodist through his negligence any more than

it can when the injury results from the negligence of a lawyer or a physician or surgeon.

However, there can be no doubt that a corporation may undertake to furnish the services of a competent physician or the service of a competent chiropodist, and that it may under certain circumstances be liable in damages—as, for instance, if the person employed was not authorized to practice; that he was incompetent, and the corporation had knowledge of his incompetence, or in the exercise of due care could have obtained such knowledge, etc. No such case was presented here.

Damages for Woman Negligently Caused a Miscarriage

(Malone v. Monongahela Valley Traction Co. (W. Va.), 140 S. E. R. 340)

The Supreme Court of Appeals of West Virginia says that in this case, in which the plaintiff obtained a judgment for $4,500 damages for personal injuries, an instruction told the jury that it might find damages for her personal injuries, and the pain and mental anguish resultant therefrom, but that it should also find damages for pain, suffering and anguish suffered by her because of the injury to and death of the child, which was stillborn, and therefrom it could find damages for her injury and loss. While the instruction was not as clear as it might have been, the jury could reasonably conclude that the loss of the child was a proper element to be considered in arriving at damages commensurate to reimburse the plaintiff for such loss. For this error the judgment in her favor must be reversed, the verdict set aside, and a new trial awarded.

When injuries negligently inflicted on a pregnant woman produce a miscarriage, she is entitled to recover damages that will compensate her, not only for the personal injuries, but also for the mental and physical suffering and any impairment of her health occasioned by the miscarriage, as a proper element of damages so far as it is a part of her personal injuries. She is not entitled to recover for the loss of the child, or its society or prospective earnings. It is quite generally held that the loss of the offspring is not a proper element of damage. When the injury results in a miscarriage, the mother is entitled to damages to compensate her for the pain and suffering occasioned by the miscarriage, but not for the pain and suffering occasioned by loss of the child. In other words, this court holds that physical pain, suffering and distress of mind suffered by a woman who is caused to miscarry and give birth to a stillborn child are proper elements on which to base damages in an action for injuries negligently inflicted on her, which caused the miscarriage; but mental anguish and suffering because of injuries to and the loss of the child cannot be considered in arriving at damages to compensate her for her personal injuries.

Indictment Upheld and View of Narcotic Act Stated

(Nelms v. United States (U. S.), 22 Fed. R. (2d) 79)

The United States Circuit Court of Appeals, ninth circuit, in affirming a judgment of conviction of violating the Harrison Narcotic Law, says that one count of the indictment charged that the defendant, being a physician duly registered under this law (as amended by the act of Feb. 24, 1919) did knowingly and unlawfully sell, barter and dispense to one Frances De Marr, alias Louise Fitzpatrick, a derivative of opium, to wit, about 12 quarter grains hypo tablets of morphine sulphate, "not in pursuance to any written order of the said Frances De Marr on a form issued for that purpose by the commissioner of internal revenue of the United States, and not in good faith and in the course of his professional practice only, the said selling, bartering and dispensing being through a written order of the said Frances De Marr, in the form of a prescription signed by the said defendant, which said prescription called for the delivery to the said Frances De Marr of the amount of drug above prescribed; that the defendant intended that the said Frances De Marr should obtain the drugs from a druggist upon the said orders; that the said Frances De Marr did obtain upon said orders drugs of the amount and kind above described pursuant to said prescription"; that she did not require the administration of morphine by reason of disease, and that the defendant did not dispense any of the drugs for the purpose of treating any disease, and that the drug was dispensed by the defendant in the form in which such drugs are usually consumed by persons addicted to the habitual use thereof, to satisfy their cravings therefor, and were adapted to such consumption. The second and third counts were in the same form as stated above, except that the dates, qualities and aliases used by Louise Fitzpatrick were different. It was contended that the indictment failed to charge a sale or dispensing, or that there was any connection between the defendant and the druggist who dispensed the drugs, or that the recipient was not a patient of the defendant, or that the quantity was such as was usually consumed by addicts. The court thinks that in their substance the several contentions were unsound and have been disapproved of by frequent interpretations of the statute. The court holds that the indictment was sufficient and that it was not necessary to charge the physician as an aider and abetter.

This court's view is that the statute does not prevent a registered physician from dispensing the drugs to a patient by prescription strictly in the course of his professional practice, but that if a registered physician issues a prescription for the drugs not in the course of professional practice only, and does so with intent that the recipient shall obtain the narcotic from a druggist on such prescription, and has not given the prescription in good faith to treat disease from which the patient is suffering, he takes a principal part in a prohibited sale of narcotics and by so doing violates the law, no matter whether the quantity is great or small, or whether the druggist to whom the prescription is delivered for filling has knowledge of the circumstances under which the physician has given the prescription, or is advised of any relationship that may have existed between the physician who gave the prescription and the recipient of the prescription.

Surgeon Held Not Liable for Breach of Contract

(Perry v. Hodgson (Ga.), 140 S. E. R. 396)

The Court of Appeals of Georgia, division 1, in affirming a judgment for the defendant, says that the plaintiff was 18 years of age. According to the petition, when he was a small boy he suffered from a bone infection of the spine for which he received surgical treatment that arrested the disease and left him with some lameness in his left leg. The defendant often saw him and on one occasion said to him: "I want to perform a slight operation on you, and straighten your leg. There is no use in your going through life lame." Two weeks later the defendant repeated the same statement, and requested that the plaintiff's father come to see the defendant about the operation. The father told the defendant that it would never do to go anywhere near the plaintiff's hip joint or the "track" through which the controlled infection drained. The defendant said he would not do so; that he was just going under the skin and clip some leaders and muscles, and the operation would not require more than twenty to thirty minutes. At a later date, after the defendant had repeated his assurances with reference to the character and effect of the proposed operation, the father contracted with him to perform it. The agreement was "that the operation would only be a minor one; that defendant would only go under the skin and clip the leaders and muscles, and would not go near plaintiff's hip joint or the 'track.'" After the defendant had operated on the plaintiff the defendant said to the father that he was greatly disappointed in the results obtained, although he had cut to the capsule of the hip, far deeper than he expected to cut. As a result, the plaintiff was a helpless and hopeless cripple, his condition progressively growing worse. The evidence in this case was in sharp conflict, and, under the law, this court was without authority to set aside the verdict for the defendant on the general grounds of the motion for a new trial.

In charging the plaintiff's theory of the case, that the defendant committed a breach of his duty if he performed a different operation from the one he contracted to perform, the trial court said:

> Such other or additional operation would be considered in law a trespass on the person of the patient, unless the surgeon could show that such other or additional operation was necessary to save the life of, or prevent

injury to, the patient, and there existed an emergency in which the consent of the patient or some person authorized to act for him could not be obtained.

This instruction was complained of in the motion for a new trial. But, while there was no direct evidence that any additional operation was necessary either to save the patient's life or to prevent injury to him, there was evidence to the effect that the operation was proper and necessary; and, while it would have been better to omit the charge complained of, yet, after looking through the entire record, this court was so impressed with the perspicuity and fairness of the charge as a whole, and with the impartial and lucid manner in which the issues in the case were presented to the jury, that this court does not believe that the jury was confused or misled, or that the plaintiff suffered prejudice.

The remaining grounds of complaint were of the admission in evidence, over the plaintiff's objection, of the testimony of various surgeons to the effect that the operation performed was recognized by the profession as a proper one, and was proper in the plaintiff's case. The testimony complained of in each of said grounds was to the same effect, and in each instance the same objection was made:

> That it was irrelevant in the case; that the issue on this point was not as to the character of the operation as being good surgery or not, or being skilfully performed or not, but the issue was as to whether or not the operation was the operation contracted to be performed.

Bearing in mind that the defendant's plea denied the alleged contract and averred that the operation performed was done in a skilful, careful and proper manner, and alleged that the plaintiff's condition was not due to any act of negligence on the part of the defendant, this court finds no error in any of these grounds. The evidence referred to in these grounds was properly admitted.

Physicians Qualified to Speak as Experts—Rape

(State v. Brody (W. Va.), 140 S. E. R. 546)

The Supreme Court of Appeals of West Virginia, in affirming a judgment of death on a conviction of rape, says that the defendant complained of the trial court's action in refusing to exclude the testimony of three physicians introduced by the state in the nature of expert testimony, on the ground that such witnesses had not qualified to speak as experts. It was shown that one of the physicians was a graduate of a medical college and had practiced his profession for fifteen years; another was a physician of ten years' experience in general practice; the third testified that he was a physician and had been actively practicing as such for four years.

The rule seems to be that an expert need not have all the knowledge possible for one in his class, to entitle him to speak, but may testify unless it clearly appears that he is not qualified at all. The question of his qualification to speak as an expert lies largely in the discretion of the trial court whose judgment will not be reversed unless it clearly appears that the witness was not qualified. The only possible ground of objection to the last two physicians mentioned must have been that they were not shown to have been graduates of a reputable medical college. These witnesses, however, were qualified by practical experience in a field of activity conferring on them special knowledge not shared by mankind in general, the rule in this respect being that one who has been engaged for a reasonable time in a particular profession will be assumed to have the ordinary knowledge common to persons so engaged. In *Livingston* v. *Com.*, 14 Grat. (Va.) 592, the court remarked in its opinion that the objection to the physician there, so far as founded on the supposed absence of proof of his being an expert, must have proceeded from a mistake—inasmuch as it appeared in the record that he was proved to be a practicing physician in the city of Richmond. This evidence, in the absence of any conflicting proof, was held in that case to be sufficient to justify the trial court in overruling the objection. This calls for a like ruling here.

To constitute the crime of rape, there must be some degree of penetration of the female genital organ by the male genital organ, but any penetration, however slight, of the labia or external lips of the vulva of the female is all that is necessary. The hymen need not be ruptured to sustain a conviction of rape.

Abrasions on Hands and Infection Through Them

(Carpenter v. Pacific Mut. Life Ins. Co. (Wash.), 261 Pac. R. 792)

The Supreme Court of Washington, in reversing a judgment which was rendered for the defendant in this action brought by the beneficiary under an accident policy, says that the policy insured against loss of life, limbs or sight "resulting independently of all other causes, from bodily injuries effected through external, violent and accidental means." The insured died from septicemia. He was a farmer, and, on discovering that one of his sheep had died, proceeded to skin it. At the time his hands were somewhat abraded, as is not unusual with men engaged in rough work. After he had completed the skinning, he washed his hands and applied carbolic salve as a disinfectant, as was his usual custom. His death occurred within five days. Evidence was introduced, without objection, to the effect that the abrasions existed to some extent before the act of skinning was undertaken, but as to how they were caused there was no word of information. It is never presumed that one wilfully and purposely injures himself, or that another has wantonly or wilfully injured him. It would seem that, these marks of violent injury being shown to exist, a proper inference to draw would be that they were caused by "external, violent and accidental means," as provided in the policy. Nor is this court satisfied that, laying aside the previous abrasions, the infection itself was not an accident, within the meaning of the policy. From the evidence it was to be seen that one might do just as the insured did innumerable times with no ill results, but, on some rare occasion, with no known difference in conditions, infection would result. The germ enters from the outside; therefore it is external. It is a foreign substance forced into the circulatory system; therefore it enters by violence. Its entry was not intended or expected; therefore it was accidental. Several cases having a surprising similarity as to the facts support a holding, when carefully read, that the infection was of itself an accident, within the terms of the policy. There are many authorities holding to a contrary and narrower rule, some on facts but little differing from those shown here. They cannot be reconciled with the cases whose views this court has adopted. This court concludes that the plaintiff was entitled to a judgment for the amount of the death loss fixed by the policy.

Use of Opiates by Testatrix—Sound and Disposing Mind

(Thomas v. Young (D. C.), 22 Fed. R. (2d) 588)

The Court of Appeals of the District of Columbia, in affirming a judgment denying the probate of a will, says that it examined the charge of the court and was satisfied that the instructions given to the jury were full and correct. The court charged, among other things, that

> Evidence of any use of opiates or drugs by the testatrix creates no presumption of lack of testamentary capacity, or of undue influence by any person, at the time of making her will, unless a preponderance of evidence shows testatrix was under the influence of said opiates or drugs at the time when said will was made, to the extent that testatrix was not of sound mind and disposing memory. As a matter of law the expression "sound and disposing mind capable of exercising (executing?) a valid deed or contract," when used with respect to an attempt to dispose of property by a last will and testament, means that the decedent must have had, at the time of the execution of the instrument, sufficient mental capacity to dispose of her property or estate with judgment and understanding, considering the nature and character of the estate as well as the relative claims of the different persons who would be the natural objects of her bounty.

It was contended that it was error for the court to instruct the jury that a sound and disposing mind implied the ability to dispose of property by will with "judgment and understanding." But this court thinks that this instruction was not erroneous, for it was manifest that the terms "judgment and understanding" were not used as synonymous with learning and wisdom, but with the sense of knowledge sufficient to comprehend the nature of the transaction. Moreover, the trial justice also instructed the jury:

> To make a valid will it is not necessary that the testatrix should be endowed with a high order of intellect, measuring up to the ordinary standard of mankind; nor is it necessary to the making of a valid will that the party should have a perfect memory, and that her mind should be wholly unimpaired by age, sickness, or other infirmities. If the party possesses memory and mind enough to know what property she owns and desires to dispose of, and the person or persons to whom she intends to

give it, and the manner in which she wishes it applied by such person, and, generally, fully understands her purpose and the business she is engaged in, in so disposing of her property, she is, in contemplation of law, of sound and disposing mind.

In the opinion of this court the record in this case did not disclose error to the prejudice of the appellant, who sought the probate of a purported will.

Society Proceedings

COMING MEETINGS

American Electrotherapeutic Association, Boston, Sept. 10-14. Dr. Richard Kovacs, 223 East 68th Street, New York, Secretary.
American Hospital Association, San Francisco, August 6-10. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.
Colorado State Medical Society, Colorado Springs, Sept. 11-13. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.
Delaware, Medical Society of, Rehoboth, Sept. 11-12. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.
Idaho State Medical Association, Yellowstone Park, August 27-29. Dr. J. N. Davis, Kimberly, Secretary.
Kentucky State Medical Association, Richmond, Sept. 10-13. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Medical Library Association, New York, September 5-7. Miss Sue Biethan, Medical Librarian, University of Michigan, Ann Arbor, Sec'y.
Montana, Medical Association of, Yellowstone Park, August 27-29. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.
Pacific Association of Railway Surgeons, San Francisco, August 24-25. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
South Dakota State Medical Association, Hot Springs, August 7-9. Dr. John F. D. Cook, Langford, Secretary.
Washington State Medical Association, Seattle, August 27-30. Dr. Curtis H. Thomson, 508 Cobb Building, Seattle, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 11-14. Mr. J. G. Crownhart, 153 East Wells Street, Milwaukee, Executive Secretary.
Wyoming State Medical Society, Yellowstone Park, August 27-29. Dr. Earl Whedon, 50 North Main Street, Sheridan, Secretary.

MEDICAL ASSOCIATION OF GEORGIA

Seventy-Ninth Annual Meeting, held May 9-11, 1928, at Savannah

The President, DR. WILLIAM A. MULHERIN, Augusta, Ga., in the Chair

Georgia's Health Problems: Brill's Disease and the Convalescent Typhoid Carrier

DR. T. F. ABERCROMBIE, Atlanta: Brill's disease, or American typhus fever, has probably been in existence in the southeastern states and along the Atlantic seacoast for many years. It is somewhat similar clinically to the old world typhus, although not so severe. It is rarely fatal. In 1927, the Weil-Felix test was adopted in our laboratory as a routine procedure with all specimens of liquid blood submitted for typhoid or paratyphoid blood cultures. In a series of about 800 specimens submitted for general laboratory examination, seventy-five gave positive Weil-Felix tests. In many instances, Brill's disease was not suspected until the positive test was obtained. No doubt many cases are never diagnosed. Brill's disease occurs among all classes of people, and there is no evidence to incriminate the body louse in the spread of this disease. Careful search has been made in hundreds of cases for body lice, with negative results, except in one or two instances. The rat flea is now being studied, for the majority of cases occur among adults who live or work in large buildings suitable for infestation with rats.

Our bureau of vital statistics received reports of 639 deaths due to typhoid in Georgia in 1927. This represents a mortality rate of 20.2 per hundred thousand of population. During the year 1927, there were 260 deaths from diphtheria, or 8.2 per hundred thousand; 227 deaths from malaria, or 8.7 per hundred thousand; 276 deaths from dysentery (including infantile diarrhea), or 8.7 per hundred thousand. There were more deaths from typhoid than from both diphtheria and malaria combined but there has been a considerable decline in the typhoid morbidity during the past ten years in Georgia.

There are two kinds of carriers—the temporary convalescent and the chronic healthy carrier. Both types together are said to be responsible for 50 per cent of all cases. Either directly or indirectly, they are probably responsible for every case. According to Nichols, 80 per cent of all chronic healthy carriers are women. Our own limited observation bears this out. Those discovered in Georgia have been women engaged in the handling of foods. All carriers have probably at one time had typhoid, either severe or too mild to require medical attention and diagnosis. If it were possible to control the convalescent carrier, we could thereby lessen, if not irradicate, all other kinds of carriers. The usual practice is to require two successive negative stool and urine examinations in every case before the patient is dismissed from quarantine or medical observation.

Tularemia

DR. J. A. REDFEARN, Albany: I have seen three cases. It is well to remember tularemia whenever there is an ulcer with regional glandular involvement, and to inquire whether a wild rabbit has been handled within the past few days or weeks. If inguinal glands are involved, instead of epitrochlear and axillary glands, this involvement may be due to the bite of a tick or there may be primary glandular involvement without evidence of initial lesions. The primary lesion may occur in the conjunctival sac with local glandular involvement; this is always quite serious.

The Importance of Eye Examinations in the Diagnosis of Intracranial Lesions

DR. CHARLES E. DOWMAN, Atlanta: Every patient presenting symptoms suggesting a possible lesion of the nervous system is entitled to a systematic neurologic examination. Such an examination is not complete unless the visual organs are investigated thoroughly. The ophthalmologist should therefore be looked on not only as one who treats diseases of the eye but also as one who may aid materially in the diagnosis of lesions of the nervous system, as well as certain systemic diseases. The routine use of the ophthalmoscope by the general practitioner is fortunately becoming more and more common.

Primary Pulmonary Aspergillosis

DR. ERNEST F. WAHL, Thomasville: A woman, aged 39, complained of coughing and wheezing. Six weeks previously she had brushed a heavy growth of mold from a pair of damp shoes. She recalled distinctly that she inhaled dust from the friable, dry growth. That night she complained of shortness of breath and coughing, but the most distressing symptom was wheezing. Each day thereafter the coughing and wheezing became more severe, being worse at night and preventing rest. There was no expectoration until nine days after the onset of the illness, when small round masses which resembled lumps of gray gelatin were raised. On one occasion, after a severe paroxysm of coughing, the sputum was streaked with blood. Although tubercle bacilli were never found in the sputum, a diagnosis of pulmonary tuberculosis was made independently in two different clinics. The sputum was tenacious on admission but after the administration of iodides it became watery and contained gray gelatin-like masses the size of a French pea. Mycelia were found in fresh preparations. Repeated cultures and subcultures revealed a heavy growth of aspergillus. Dr. Charles Thom, U. S. Department of Agriculture, identified the organism as *Aspergillus flavus*. Following the isolation of *Aspergillus* in the sputum, six daily intravenous injections of sodium iodide (20 cc. of a 10 per cent solution) were given. Improvement of the pulmonary condition was noted after the first injection. After the sixth injection, the lungs were clear. The subjective relief that followed the administration of the sodium iodide was striking; sleep in the recumbent position was possible; expectoration ceased, and the substernal discomfort disappeared. The patient was discharged with instructions to take potassium iodide by mouth during three weeks of each month. For twelve months the patient has been asymptomatic; she has regained her strength, and has led a normal life.

Complete Prolapse of the Rectum

DR. W. E. PERSON, Atlanta: The proposition of Moschowitz that complete prolapse of the rectum is hernia has been proved for the following reasons: First, it has the same etiology. Second, the prolapse is a protrusion of a viscus from its natural cavity. It contains small intestine, as shown by physical examination and the x-ray. These facts agree with the definition of a hernia. Third, it is cured by the application of the same principles; namely, obliteration of the sac and the restoration of the normal supports.

Routine Circumcision at Birth?

DR. THOMAS BOLLING GAY, Atlanta: Sixty-one per cent of 650 white male infants examined had some degree of phimosis. Forty-seven per cent of the children examined at 7 years had some degree of phimosis. This may be a cause of balanitis in some cases. There is no available evidence to show that circumcision will prevent cancer of the penis, but phimosis may be a predisposing cause. There is no evidence to show that phimosis is a cause of enuresis. Phimosis may be a predisposing cause of masturbation in some cases. Phimosis may provide a weak point in the body's defensive mechanism against venereal disease. Hemorrhage following circumcision at birth cannot be considered seriously as a contraindication. Meatal ulcer due to ammoniacal diapers in the circumcised is not a contraindication, as it can be easily cured and prevented. Circumcision is conducive to better hygienic conditions. Routine circumcision at birth is warranted.

Urinary Antiseptics

DR. MONTAGUE L. BOYD, Atlanta: The publicity given urinary antiseptics in the past few years makes it advisable to call attention to the need of removing the causes of urinary infections as well as treating the patient with urinary antiseptics. The cause of the infection being removed, there is a tendency for the body to overcome infection, so that in most cases only a little assistance from urinary antiseptics is required for the cure of the infections. This permits the employment in most cases of the most conveniently employed of the three antiseptics, methenamine, which occasionally has to be reinforced by monobasic acid sodium phosphate or ammonium chloride for the purpose of acidifying the urine. Methylthionine chloride is sometimes better, especially in those cases in which the urinary tract is irritated by the methenamine, and also by alkaline urine, when it is difficult to acidify the urine. Hexylresorcinol is unpalatable, has a tendency to produce gastro-intestinal disturbances, and is rarely more effective than the more easily taken antiseptics; therefore, I rarely find it necessary to employ it.

What Is Needed to Improve the Practice of Obstetrics

DR. J. R. MCCORD, Atlanta: Good obstetrics can be and is being done in the home, without mortality and with a low morbidity. Education along present lines is accomplishing a vast good. But months of earnest prenatal work can be suddenly swept away by one careless vaginal examination. Obstetrics is a science, and to practice it as such takes long and intensive training. Just as long as people who have not had this training practice midwifery, there are going to be lives needlessly lost and women made to suffer unnecessarily. With the basic principles of obstetrics thoroughly mastered, the technical details of delivery, whether in the home or in the hospital, are simple and become of minor importance. The man doing obstetrics needs as the two most important items of his equipment a thorough knowledge of the mechanism of labor and a bountiful store of patience. Soap, water, a safety razor and a pair of rubber gloves complete an ample equipment. When the general surgeon cares for an abnormal obstetric case, he follows the line of least resistance. A knowledge of the mechanism of labor is just as important in an abnormal case as in a normal one, and there are few general surgeons who have the full knowledge of this mechanism. Results in hospitals, if statistics are to be believed, are quite as deplorable as those in the home. It is not a question whether the patient is or is not in a hospital but who is attending her. The widespread teaching of some men, of methods devised by them to facilitate enormous practices, instils into minds not fully trained procedures that are conducive of harm. Too much has been said about giving women painless labors when the ulterior motive is to give the physician shorter labors. To practice obstetrics properly, an obstetric conscience is needed. Schools with weak obstetric departments, that teach largely by didactic lectures and are not able to give students generous practical work under careful supervision, turn out men who know little obstetrics, and they practice it carelessly and indifferently as an aid to further work. If when they leave school they know more about obstetrics than about any other subject, they are eager to go into the work as a specialty. I believe that an outdoor obstetric service, at best but poorly supervised, is the wrong way to give men their practical experience in obstetrics.

Medical Economics

DR. W. P. HARBIN, Rome: Medical economics begins when a young man decides to study medicine. After this, in most instances, he is financed by some one for eight or ten years. In other words, he devotes from one ninth to one seventh of his three score years and ten to preparation, so that he begins his work after his internship with an incurred obligation and the duty of serving the public and in a large measure his state and country. In most instances the state has done little or nothing to finance him during his preparation for the practice of medicine; consequently, he has a right to demand pay for medical attention from the public. There should be more cooperation and less of a spirit of competition. Many a high class physician has been forced to sacrifice his ideals and efforts at scientific efficiency to recoup himself for failure in financial affairs in order to make a living. Group medicine of the ideal kind has eliminated competition without destroying individualism and has partly solved the financial question so far as overhead expense is concerned. When these two questions have been settled, the medical man can do the best for himself and for his patient. In the beginning of our careers, we were advised not to sue people for the collection of our accounts because the ill will incurred would be a menace. If a patient is able and will not pay for "honest professional service," he should be made to pay. As a rule, when a patient does not settle his account, he will not be one's patient in the future and he will very likely say unpleasant things about the physician to whom he owes money. The physician's life is one of irregularity. He is expected to work day and night. The physician is indispensable to the hospital and hospitals are indispensable to the physician. The nearer the physician's office is to the hospital, the better it is for the hospital, the physician and the patient. If all the physicians' offices were in hospitals, it would be better for every one concerned. If a physician's office is in an office building, it is very hard for him to have the facilities that a hospital could give without duplicating an overhead expense, but in the present state of competition medical men are compelled to have their offices in a central location where contacts are made more quickly and easily. The hospital has more facilities for a physician than he can have in an office building, provided the hospital is willing to furnish this facility. If a physician could have all his patients in one hospital and his office in cooperation with a hospital, it would save his time; he could do more and better work, and the charges to patients would be less. Financial success in our profession does not necessarily mean commercialism. There is no way by which the public can pay the medical profession of the past and present for services rendered in saving life, in the prevention of disease and in the prolongation of life. Today the cost of hospital and professional service to the patient is largely in our hands; if we cannot eliminate duplications and unnecessary cost, the state may do it for us.

The Home Management of Diabetes Mellitus

DR. W. E. MCCURRY, Hartwell: The intelligent care of diabetes requires the cooperation of four distinct agents. These are the laboratory, the physician, the nurse and the patient. The nurse goes into the home, trains the patient in his usual environment, and remains with him until his education is sufficient to enable him to depend on himself. He is taught the method of counting and recording his food values, the administration of insulin, the symptoms of hypoglycemia and the premonitory symptoms of the chief complications, and above all he is impressed with the paramount importance of reporting to his physician immediately on the development of any untoward symptoms. The ordinary nurse is not competent to impart the requisite instruction until she herself has had special training, but to the nurse who is willing to acquire this special training the care of diabetes offers pleasant and lucrative work. As the success of the whole plan of treatment depends on her, it is essential that the physician himself train her in his own methods. To attempt treatment in the home without an efficient nurse has, in my experience, proved futile, and I no longer am willing to accept the responsibility. The advantages of home manage-

ment are that the patient is trained in his own kitchen to select his food from the regular family larder; that he works in an environment to which he is accustomed and in which he feels at home; that he tests his urine on his own cook stove or other heating appliance, and that he cares for his insulin apparatus with the means at hand. He is not compelled to adapt himself to a new situation before attaining skill in the management of his case from practice. He is surer of himself and does not readily become discouraged; hence he is less likely to break regulations.

The Treatment of Primary Anemia with Liver Fraction

DR. GLENVILLE GIDDINGS, Atlanta: The administration of liver extract in cases of primary anemia was followed by a prompt and sustained rise in the reticulated red cells. After a stated interval this was followed by a prompt and sustained rise in the red blood cells and hemoglobin. This result was obtained in all cases treated with this fraction. The maximum effective dose of this material seems to be six vials a day, and the minimum effective dose in patients with high counts seems to be two vials each day. The relief from nausea and vomiting after the administration of the fraction was striking. Transfusion, as a rule, seems to be an unnecessary procedure in the treatment of this disease. With adequate dosage of the extract, possibly in conjunction with a proper diet, there seems to be no obvious reason why a patient should ever suffer a relapse in this disease.

Congenital Hypertrophic Stenosis of the Pylorus

DR. A. R. ROZAR, Macon: I plead for careful examination of infants from the ages of 2 to 6 weeks who have constant and projectile vomiting. It should not be taken for granted too long that the condition is due to improper feeding. If pyloric stenosis is suspected, one should not procrastinate too long in the hope that atropine will cure it. There is the spasmodic type, but if the symptoms do not remit, the hypertrophic type is probably being dealt with, and surgical intervention should be resorted to before the patient is exhausted.

Basal Metabolism in Normal Children from Six to Twelve Years of Age

DR. GEORGE F. KLUGH, Atlanta: The tests were made in the same way and under the same conditions as tests on adults. The children rode to the office without breakfast and were tested after a rest period of twenty to thirty minutes. The children were apparently normal, white, American school children, who made their grades in school. They came from different nationalities and from different parts of Atlanta, forming a fairly representative group. Twenty-six different children were studied and fifty tests were made, with an average of plus 10 per cent above the Benedict and Talbot tables. The average rates on first tests and on repeated tests were practically the same. The highest reading was plus 39 per cent in a child with a consistently high rate, and the lowest was minus 4 per cent in a child with a consistently low rate. If plus 15 per cent is added to the Benedict and Talbot tables and 15 per cent variation plus and minus is allowed from this standard, practically all the tests are included. Fourteen children were given from two to four tests, and these readings were fairly constant for each child. The variations ranged from 0 to plus 16 per cent between the lowest and the highest. There seems to be very little variation in the different years that cannot be accounted for by individual variations in the children.

Complications Sometimes Overlooked in Diseases of Children

DR. R. E. MCGILL, Montezuma: Men in the small towns have to cover the entire field of medicine; they have to be obstetrician, surgeon, gynecologist, eye, ear, nose and throat man, pediatrician, laboratory man, internist, and, sometimes, dentist, as well as spiritual, political and financial adviser. Three of the more common conditions which should be of special interest are otitis media, pyelitis and endocarditis. Of the three, middle ear infection is most often encountered. It is far better to be on the alert, and to recognize the condition and puncture the drum, than to allow it to rupture. By far the surest and most satisfactory way of recognizing this condition early is by frequent examination of the ear canal. Pyelitis complicates many acute conditions, but most cases of pyelitis follow acute diarrhea. Frequent microscopic examinations of the urine will save many embarrassments in treating children. Pyelitis predisposes to the formation of calculi, and the tendency to cause nephritis and pyonephrosis make of it a disease entity well worth our earnest consideration. If endocarditis is recognized before any permanent harm has been done to the heart, and the child is kept absolutely quiet in bed—for weeks, and even months if necessary—on proper treatment, it may be cured.

Chronic Infection of the Maxillary Sinus and Its Relation to General Medicine

DR. WILLIAM C. WARREN, JR., Atlanta: Latent or chronic infection of the sinuses is not uncommon in adults and children. Systemic diseases are often secondary to chronic infection of the sinuses. Suspected cases should be under the observation of a specialist. A negative opinion in suspected chronic sinusitis should be given only after repeated examinations. The treatment of chronic maxillary sinusitis is surgical.

Zinc Ionization in the Treatment of Purulent Otitis Media

DR. FRANCIS B. BLACKMAR, Columbus: It is not asserted that this treatment will cure a mastoiditis. However, by use of the treatment in cases which were not responding to treatment and were rapidly becoming worse, it is felt that in several instances a mastoid infection was avoided. This form of treatment is useless in the cases of acute otitis which are accompanied by a mastoiditis almost at the same time or right after the otitis media develops. Should there be a recurrence after a year, it might mean a lighting up of a dormant infection or a new infection of an ear predisposed to disease by past injury. I have used this form of treatment in three types of cases; acute purulent otitis media, chronic purulent otitis media (not operated on), the most important class, and as a treatment to follow old mastoidectomies for the purpose of drying up the discharge from the ear. In many cases it was used only after all usual treatment had failed and no improvement was apparent, or when the patients were becoming progressively worse in spite of treatment. Nevertheless, my results have been good with very few exceptions.

A Type of Pneumonia of Frequent Occurrence and Often the Cause of Sudden Death

DR. EDGAR R. PUND, Augusta: There occurs a type of pneumonia which may rapidly prove fatal, has a distinctive pathology, and is of frequent occurrence. That this disease is related to influenza is evidenced by the fact that the pathologic condition is similar to that observed at the various military encampments during the pandemic, and that it is rarely found in the other forms of pneumonia, with which we are familiar. The morbid anatomy is so striking that these cases can readily be recognized in the morgue without a previous knowledge of the course of the fatal illness. Most of the cases are those in which death occurred suddenly on the street, or while the patient was indisposed with what was considered a minor ailment. Death occurs sometimes when the person is at work, and in many instances after he has completed a day's work. Rarely has a physician been consulted. I have found the condition more frequently in negroes than in white persons. While this may be due to the fact that more autopsies are performed on negroes than on white persons, it is thought that it is probably due to the disregard of ailments which is more characteristic of the negro race than of the white. It occurs about equally in males and females. The youngest patient in my series was 9 years of age, while the oldest was 50. Most of the cases, however, occur in the second and third decades. The time of occurrence is in the autumn, winter and spring. The manner of death is that of pulmonary edema. The edema comes on suddenly and may cause death within a few moments or within a few hours. Much frothy or bloody frothy fluid is expectorated by coughing, or even flows from the nose and mouth with respiration. Consciousness may or may not be retained. The patient literally drowns in his own secretions, and after death much of this frothy fluid flows from the nostrils and mouth.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Anatomy, Philadelphia

41: 153-409 (May 15) 1928

Thickness of Subcutaneous Tissues in Living and Dead. T. W. Todd and A. Lindala, Cleveland.—p. 153.
Pyloric Musculature: Pyloric Block. B. T. Horton, Rochester, Minn. —p. 197.
Intravascular Phagocytosis of Erythrocytes. E. R. Clark and E. L. Clark, Philadelphia.—p. 227.
Origin of Sex Cells in Man. C. S. Simkins, Memphis, Tenn.—p. 249.
Development of Hypophysis Cerebri of Albino Rat. J. L. Schwind, Ithaca, N. Y.—p. 295.
Late Development of Thymus in Cat: Nature and Significance of Corpuscles of Hassall and Cystic Formations. O. A. Dearth, Ithaca, N. Y.—p. 321.
Axillary Artery in White and Negro Stocks. C. F. De Garis, Baltimore, and W. B. Swartley, Philadelphia.—p. 353.
Presence of Melanophore-Expanding and Uterus-Stimulating Substance in Pituitary Body of Early Pig Embryos. F. F. Snyder, Rochester, N. Y.—p. 399.

American J. Psychiatry, Baltimore

7: 863-1108 (May) 1928

Some Problems of Functional Psychoses. C. M. Campbell, Cambridge, Mass.—p. 863.
Fingersucking and Accessory Movements in Early Infancy: Etiologic Study. D. M. Levy, New York.—p. 881.
Blood Chemical Changes in Toxic Psychoses. H. D. McIntyre, Cincinnati.—p. 919.
Pellagrous Insanity. T. C. Cooper, Pineville, La.—p. 945.
Fifty Cases of Psychopathic Personality. G. E. Partridge, Baltimore. —p. 953.
Acute Psychiatric Type of Epidemic Encephalitis. I. J. Sands, New York.—p. 975.
Epidemic Encephalitis and Interpretation of Mental Disease. I. Hendrick, Boston.—p. 989.
Anthropometric Study of General Paralysis Based on Anthropologic Measurements. H. A. Bunker, Jr., and S. B. Meyers, New York.—p. 1015.

Am. J. Roentgenology & Rad. Therapy, New York

19: 413-512 (May) 1928

Roentgenologic Aid in Diagnosis of Ileus. J. T. Case, Battle Creek, Mich.—p. 413.
Roentgenologic Manifestations in Eighty-Seven Cases of Gastric Syphilis. A. B. Moore and J. R. Aurelius, Rochester, Minn.—p. 425.
*Roentgenotherapy of Brain Tumors: Astrocytomas. P. Martin, Brussels. —p. 432.
Treatment of Mouth and Face Conditions by Irradiation. I. I. Kaplan, New York.—p. 437.
*Roentgen-Ray and Radium Treatment of Plantar Warts. H. H. Hazen, Washington, D. C.—p. 440.
Physical and Clinical Foundations of Oversoft Roentgen-Ray (Grenz-Ray) Therapy. O. Glasser and U. V. Portmann, Cleveland.—p. 442.
Effect of Irradiation on Suprarenal Gland. A. U. Desjardins, Rochester, Minn.—p. 453.
Standard Ionization Chamber for Roentgen-Ray Dosage Measurements. W. Duane and E. Lorenz, Cambridge, Mass.—p. 461.
Some Experiments on Production of Rapid Serial Roentgenograms from Screen Image by Means of Cinematographic Camera. R. J. Reynolds, London.—p. 469.

Brain Tumors: Astrocytoma.—Three verified cases of astrocytoma are described by Martin, which were not at all influenced by roentgen-ray treatment. He urges that before undertaking roentgen-ray treatment of a brain tumor one should at least perform a decompression and every attempt should be made to establish a correct pathologic diagnosis.

Radiotherapy of Plantar Warts.—Hazen asserts that both roentgen rays and radium will usually clear up plantar warts without pain, discomfort or subsequent injury of any type. This condition is much more common in women than in men; in Hazen's series of cases fifty of the patients were males and 107 females. The average number of treatments was three, although in several instances as many as seven treatments were given. One very striking result of the first treatment was that pain almost completely disappeared between the fourth and sixth day; this has occurred in more than 90 per cent of all patients. In many instances at some later date there has been a very slight period of discomfort, but this is rarely severe enough to be annoying. In the radium treatment, 20 mg. in needles has been employed. In other words, gamma radiation has always been used. The radium has been allowed to act for from one to one and one-half hours. In a few instances, roentgen-ray and radium treatments have been alternated. The results from this light dosage are uniformly brilliant and there has not been a single instance of unpleasant sequelae. In two cases in which roentgen-ray treatment was not successful, the lesions were cured by radium. In all, radium was employed in twenty-one cases: radium alone in six cases, and the combination of roentgen rays and radium in fifteen cases. In four instances the results are unknown. One case was a failure and sixteen cases resulted in permanent cure. The roentgen ray alone was used in 136 cases. In sixteen instances the result is unknown. There were eight known failures with the roentgen ray alone. Out of 120 cases in which the final results are known, there were 112 cures. When roentgen rays and radium were combined there were only five failures in 137 cases.

American J. Tropical Medicine, Baltimore

8: 203-260 (May) 1928

*Dengue Fever: Transmission by Aedes Aegypti. P. A. Schule, Manila. —p. 203.
Mollusks of Importance in Human and Veterinary Medicine: II. J. Bequaert, Boston.—p. 215.
*Postmortem Observations in Acute Jellyfish Poisoning with Sudden Death in Status Lymphaticus. H. W. Wade, Culion Leper Colony, P. I. —p. 233.
New Anopheline Mosquito, Anopheles (Chagasia) Bathanus Dyar, Discovered in Canal Zone. D. P. Curry, Balboa Heights, C. Z.—p. 243.
Incidence of Malaria Among African Children. H. Hanson, New York. —p. 249.

Experimental Dengue Fever.—Seven men proved to be susceptible to dengue fever were bitten by *Aedes aegypti* at varying intervals of time after the mosquitoes had taken the virus by feeding on a known experimental case of the disease. Dengue fever was not transmitted by interrupted feeding nor when the interval between the infectious feed and the subsequent biting was two, three, four or six days. Schule found that it was transmitted when the interval between the infectious feed and the subsequent biting was eight days, ten days or more.

Fatal Jellyfish Poisoning.—A well developed, very healthy young man, with only slight remaining evidences of leprosy, was working waist deep in the water of a mangrove swamp when he called out in distress to fellow workmen nearby that something had bitten him. He quickly collapsed, breathing with difficulty, and died within a very few minutes. Wade could not find any mark suggestive of a snake bite, nor any other abnormality except purplish (livid) markings ascribable only to contact with a large, long tentacled jellyfish. The head was livid. The lungs were distended and did not collapse; they contained much frothy serous material that had escaped from the alveolar capillaries. The right heart was full, and the blood was fluid and dark. The viscera were congested, especially the kidneys, which showed parenchymatous injury and albuminous material in the glomerular capsules. The fatal outcome was too sudden to be ascribed to the poisoning alone. Definite evidence of status lymphaticus was found, and it is probably because of the peculiar unstability known to exist in this condition that the unquestionably severe shock of the jellyfish sting induced sudden death.

Annals of Internal Medicine, Ann Arbor, Mich.

1: 861-950 (May) 1928

Adaptation and Compensation as Origin of Disorders. J. Bauer, Vienna. —p. 875.
Multiple Myeloma. D. P. Barr, St. Louis.—p. 884.
Studies in Blood Volume with Dye Method. L. G. Rowntree and G. E. Brown, Rochester, Minn.—p. 890.
Cardiac Conditions Contraindicating Use of Digitalis. J. Sailer, Philadelphia.—p. 902.
Influence of Iodine in Therapy of Primary Hyperthyroidism. F. R. Menne, T. M. Joyce and J. D. Stewart, Portland, Ore.—p. 912.

Archives of Dermatology & Syphilology, Chicago

17: 767-908 (June) 1928

*Paget's Disease of Nipple. L. M. Pautrier, Strasbourg, France.—p. 767.
Actinomycosis, Cutaneous and Systemic. H. Feit, New York.—p. 791.
Schamberg's Peculiar Progressive Pigmentary Disease of Skin: Case. G. V. Stryker and R. H. Davis, St. Louis.—p. 795.
*Organic Luetin Test of Syphilis. L. Hollander, Pittsburgh.—p. 797.
*Thyroid Treatment of Alopecia Areata. M. B. Gordon, New York.—p. 817.
Progressive and Recurrent Dermatofibrosarcoma (Dermatofibrosarcoma Protuberans). F. E. Senear, E. Andrews and D. A. Willis, Chicago.—p. 821.
Comparative Results of Colloidal Gold, Colloidal Mastic and Colloidal Benzoin Tests of Cerebrospinal Fluid. C. E. Reyner, Detroit.—p. 833.
Quantitative Kahn Reaction in Treatment of Syphilis. R. R. Gasser and J. E. Houghton, Washington, D. C.—p. 843.
Useful Carbon Dioxide Mold. S. S. Greenbaum, Philadelphia.—p. 847.

Nature of Paget's Disease of Nipple.—Pautrier urges that an exhaustive examination be made in every case of Paget's disease; that just a biopsy of the nipple be not considered sufficient; that the search for the deep-seated mammary carcinoma be made by histologic examination of the whole gland; that a detailed cytologic examination be made of the cancerous nodules of the milk ducts of the mammary gland in order to ascertain the origin; that in cases of Paget's disease in regions other than the nipple the diagnosis be made only after true Paget cells, and not mere dyskeratosic cells, have been found in an epithelioma, and that the hypothesis that a deep, glandular cancer has originated in an adjacent gland or in glands of the skin be considered and verified. If Paget's disease of the nipple is not a mere precancerous dyskeratosis, but a genuine epidermotropic cancer, symptomatic of a carcinoma of the breast, it necessitates the total and earliest possible removal of the mammary gland.

Organic Luetin Test of Syphilis.—Thirty cases are reported by Hollander in support of his statement that the organic luetin test aids in the diagnosis of tertiary syphilis and should be utilized in the evaluation of the signs and symptoms on which the diagnosis of syphilis is made.

Thyroid Treatment of Alopecia Areata.—Gordon reports a case of almost universal alopecia areata which had persisted for nine months and which had resisted all local treatment. The administration of thyroid extract was followed by immediate improvement, which continued until practically all the hair had returned. At first, 1/10 grain (0.006 Gm.) was given twice a day for one week, followed by a period of one week in which the extract was not given. The extract was then gradually increased in dosage to 0.008 Gm., 0.016 Gm., 0.03 Gm. and finally 0.06 Gm., at first twice and then three times daily, the weekly alternation being adhered to.

Archives of Surgery, Chicago

16: 1127-1278 (June) 1928

*Ménière's Disease: Diagnosis and Treatment. W. E. Dandy, Baltimore.—p. 1127.
*Experimental Studies on Denervated Lungs. R. Fontaine and L. G. Herrmann, Cleveland.—p. 1153.
*Osteochondritis Dissecans. S. B. Wolbach and N. Allison, Boston.—p. 1176.
Mixed Tumors of Thyroid (Fetal Adenomas). A. E. Hertzler, Halstead, Kan.—p. 1187.
Intrabronchial Polypoid Adenoma: Case. D. Reisner, New York.—p. 1201.
Dissections of Neck. E. I. Bartlett and C. L. Callander, San Francisco.—p. 1214.
*Use of Intra-Arterial Injections of Sodium Iodide in Determining Condition of Circulation in Extremities. A. O. Singleton, Galveston, Texas.—p. 1232.
*Intestinal Obstruction: III. Simple Obstruction: Cause of Death in Mechanical Obstruction of Upper Part of Intestine. O. H. Wangensteen and S. S. Chunn, Minneapolis.—p. 1242.
Probable Influence of Pancreatic Juice in Regulation of Gastric Acidity. R. Elman, St. Louis.—p. 1256.
Thirty-Fifth Report of Progress in Orthopedic Surgery. P. D. Wilson, Boston, and Others.—p. 1266. (Cont'd.)

Treatment of Ménière's Disease.—Dandy is of the opinion that section of the auditory nerve intracranially will permanently cure the symptoms of Ménière's disease. There has not been the semblance of an attack since operation in any of the nine cases reported. The elapsed time since operation varies from three months to three and one-half years. There was reason to question the cure by the operation in only one case. This patient is the only one of the nine who had total loss of both vestibular and auditory function at the time of the operation. Since the last attack before operation the deafness had become complete, and if this were true, the cure should and might well have been spontaneous and not dependent on surgical division of the nerve. The symptoms and signs of Ménière's disease are analyzed. The dizziness of Ménière's and pseudo-Ménière's diseases is compared with that of other known lesions—tumors, inflammations and aneurysms—in the cerebellum and brain stem. There appear to be reasons to doubt that the cause of Ménière's disease is primary in the semicircular canals. A primary lesion of the acoustic nerve seems a more probable primary source of the attacks.

Experimental Studies on Denervated Lungs.—The cause of sudden death in cases of pulmonary embolism and following thoracentesis, as well as the cause of bronchial asthma and allied conditions, may be nervous in origin. It has also been suggested that postoperative massive atelectasis (collapse) of the lungs may, in part, be due to a disturbed innervation. The studies made by Fontaine and Herrmann deal with the possibility of complete denervation of the lungs, the methods used to produce partial denervation of one lung and the changes in the physiology of respiration that were produced by such denervation. In the dog, partial denervation of one lung is a safe surgical procedure and can be accomplished by unilateral resection of the first four thoracic sympathetic ganglions, the removal of the ansa Vieusseni and the stellate ganglion, together with the resection of that portion of the vagosympathetic trunk which has included in it the middle cervical ganglion. Section of the extrinsic nerves that lead to one lung does not cause any change in the frequency or character of the respiratory movements. The partially denervated lung reacts as its normal mate to all forms of stimulation. The carbon dioxide combining power of the blood plasma remains unchanged after partial denervation of one lung. Section of the extrinsic nerves that lead to one lung does not prevent the occurrence of a typical massive atelectasis (collapse) of that lung. The ganglions situated in the bronchial walls remain intact after the most extensive operation that is directed to produce complete denervation of one lung; consequently, it is technically impossible to obtain a complete denervation of either lung. Because of the persistence of the peripheral ganglions, there will probably always be a few failures from the surgical treatment for bronchial asthma, regardless of which operative procedure has been carried out.

Osteochondritis Dissecans.—Wolbach and Allison report on a specimen removed at autopsy. The patient was reported to have died of diabetes mellitus. During the progress of the autopsy, the knee was discovered to be slightly swollen. Clinical symptoms of trouble with the knee were not recorded, but when the knee was opened, a typical instance of osteochondritis dissecans was found. The gross and histologic appearances of the specimen are described and a theory is presented which it is believed explains the modus operandi leading to the formation of these loose bodies in a joint. The separation was the effect of mechanical pressure on a portion of the articular cartilage, with underlying cancellous bone bridging a "cyst." This pressure probably was intermittent, as occasioned by variation in functional performances of the joint, and probably was the resultant of stresses operating roughly in the long axis of the bone and laterally in the anteroposterior direction. The lateral stresses are suggested by the change in the convexity of the articular surface and the presence of large defects in cancellous bone deep in the lesion. There are two essentials to this explanation: one, a sufficient loss in the condyle of cancellous bone to weaken materially the support of the articular cartilage as a whole; the other, the presence of a "cyst" immediately below the articular cartilage in a position subject to vertical and horizontal stresses.

Intra-Arterial Injection of Sodium Iodide to Study Circulation.—Six cases reported by Singleton illustrate that roentgenologic examination after the intra-arterial injection of sodium iodide accurately reveals the condition of the blood vessels. Such injection is apparently harmless when there is good capillary circulation and a free return of the blood into the general circulation. The method is apparently safe. In aneurysms of the extremities, both arterial and arteriovenous, valuable information is gained in regard to the blood vessels

entering and leaving the aneurysms and the collateral circulation, which may be of great assistance in determining the method of treatment. In spontaneous gangrene resulting from venous or arterial obstruction, the method is not safe and probably should not be used. It is contraindicated in moist gangrene with venous obstruction, and also in arteriosclerosis because of the narrowing in the arterioles and capillaries. In thrombo-angiitis obliterans, the capillaries are usually much more normal, and there is better collateral circulation; therefore, in this condition, the method should not be harmful.

Cause of Death in Upper Intestinal Obstruction.—The explanation of the rapidly fatal issue in dogs with obstruction in the upper part of the intestine, according to Wangensteen and Chunn, is to be found in the rapid dehydration and loss of chlorides accompanying occlusion of this portion of the bowel. The virtue of saline solution in the treatment of patients with obstruction in the upper part of the intestine does not lie in any protective or detoxifying influence, but in its value in replacing the chlorides and fluid lost. Evidence was not obtained to show that dogs with simple obstruction in the upper part of the intestine died as the result of absorption of toxins from the obstructed bowel. Interference with the continuity of the upper part of the intestine (occlusions or complete external fistula) gives rise to an increased nonprotein nitrogen in the blood and low blood chloride values; an increase in the excretion of nitrogen in the urine also occurs. The administration of sodium chloride prevents the increase in the nonprotein nitrogen of the blood, but the urinary excretion of nitrogen continues to be high.

Arkansas Medical Society Journal, Little Rock

24: 219-230 (May) 1928

Use of Vas Puncture in Acute and Chronic Gonorrhea. H. K. Wade, Hot Springs.—p. 219.

Endocrinology, Los Angeles

12: 129-244 (March-April) 1928

Morphology of Pars Intermedia of Human Hypophysis. A. T. Rasmussen, Minneapolis.—p. 129.
*Estrogen, New Sex Hormone. F. Firestone, San Francisco.—p. 151.
*Effect of Epinephrine on Sugar Metabolism. W. E. Burge, Urbana, Ill., and Others.—p. 157.
Graded Relation Between Intensity of Hormone Action and Character of Recipient Tissue. L. Loeb, St. Louis.—p. 161.
*Iodine Content of Blood in Ordinary Goiters and in Cretinism. F. DeQuervain, Bern, Switzerland, and W. E. Smith, Cleveland.—p. 177.
*Exophthalmic Goiter Redefined. I. Bram, Philadelphia.—p. 190.
Oral Administration of Estrus Producing Autacoid. J. H. Hannan, London.—p. 193.
Effect of Duodenal Secretin on Secretion of Insulin by Pancreas. R. Nóvoa Santos, Santiago de Galicia, Spain.—p. 199.
Sex Difference in Intestinal Length: Relation to Pituitary Size. O. Riddle and F. Flemion, New York.—p. 203.

Estrogen: Sex Hormone.—Estrogen is a biologically assayed product of human placenta containing ovarian hormone. In six cases reported by Firestone, its administration was followed by relief from the nervous functional manifestations of ovarian deficiency.

Effect of Epinephrine on Sugar Metabolism.—Burge et al. found that small amounts of epinephrine increase sugar metabolism, while large amounts decrease it.

Iodine Content of Blood in Goiter and Cretinism.—The results obtained by DeQuervain and Smith show that there is little variation between peripheral and thyroid blood iodine content. In six cases of nontoxic goiter, the iodine content of thyroid blood slightly exceeded that of the peripheral blood. In four cases the peripheral blood showed a slight increase over the thyroid blood. In one case the results were almost identical. The results seem to indicate that the act of iodine intake and output of the thyroid gland occurs without great variations, and that the iodine containing secretion of the thyroid gland arrives entirely, or for the greater part, directly into the blood stream and not by the longer route of the lymphatic system. Cretins excrete iodine through the urine at a slightly more rapid speed than normal. The blood determination, taken during the course of the experiment, again shows the interesting fact that during the same amount of iodine administration, the blood iodine content of a normal person is appreciably higher than that of the cretin.

Exophthalmic Goiter Redefined.—Bram states that exophthalmic goiter asserts itself clinically as a catabolic neuro-endocrine dysfunction: hence it may be defined as being a chronic, rarely acute, neuro-endocrine dysfunction characterized by an increased basal metabolism, loss in weight, tremor, emotionalism, persistent afebrile heart hurry, weakness, dermographia and, usually (not consistently), by hyperplasia of the thyroid gland and by exophthalmos. The presence of exophthalmos or of goiter is not imperative for its recognition; hence the synonym "exophthalmic goiter" is confusing in the diagnosis of this condition.

Florida M. Association Journal, Jacksonville

14: 545-592 (May) 1928

Treatment of Tuberculosis. W. A. Claxton, Miami.—p. 557.
Brill's Disease: Sporadic Typhus: Two Cases. T. H. Bates, Lake City.—p. 560.
Surgical Diagnosis of Upper Right Quadrant. H. A. Walker, Hollywood.—p. 564.
Spindle Cell Sarcoma of Kidney: Case Report. R. J. Holmes, Miami.—p. 569.
*Spinal Anesthesia. W. N. Parkinson, St. Augustine.—p. 570.
Present Status of Injuries to Brain and Spinal Cord. J. S. Turberville, Century.—p. 577.
Multiple Fracture of Leg Treated with Improvised Splint with Good Results. L. M. Anderson, Lake City.—p. 580.

Safety of Spinal Anesthesia.—After having induced spinal anesthesia in about 500 cases, after close association with many more hundreds of patients who have received subarachnoid injections for the induction of anesthesia, and after a review of the literature on this subject, Parkinson concludes that spinal anesthesia, in its present state of development, is a safe procedure. It has a mortality rate lower than that of general anesthesia, for major operations below the diaphragm; it improves the prognosis in a number of operations by allowing the surgeon to operate safely on patients who would probably die from the administration of ether or chloroform; abdominal and pelvic surgery is facilitated by the perfect analgesia and muscular relaxation obtained by the use of this method, and the absence of postoperative symptoms, such as nausea and vomiting, gaseous distention, motor restlessness and kidney and lung complications, is of great advantage to the patient.

Journal of Comparative Neurology, Philadelphia

45: 1-299 (April 15) 1928

Loss of Purkinje Cells, with Advancing Age, from Cerebellar Cortex of Albino Rat. T. Inukai, Philadelphia.—p. 1.
Central Nervous System of Orthagoriscus Mola. H. S. Burr, New Haven, Conn.—p. 33.
Degeneration of Peripheral Nerves. P. C. Bucy, Iowa City.—p. 129.
Endocranial Cast of Phytosaur from Upper Triassic Beds of Western Texas. E. C. Case, Ann Arbor, Mich.—p. 161.
Primitive Lines in Amblystoma and Their Relation to Migratory Lateral Line Primordia. L. S. Stone, New Haven, Conn.—p. 169.
Experiments on Reversal of Anterior End of Spinal Cord in Amblystoma Embryos. S. R. Detwiler, New York.—p. 191.
Possible Presence of Vagus Fibers in Splanchnic Nerves: Results of Examination of Splanchnic Nerves in Cats, Dogs and Rabbits After Section of Right Vagus. D. Duncan, Minneapolis.—p. 211.
Correlated Anatomic and Physiologic Studies of Growth of Nervous System of Amphibia: VIII. Development of Pattern of Differentiation in Cerebrum of Amblystoma Punctatum. G. E. Coghill, Philadelphia.—p. 227.
Corpus Striatum of Rat: Studies on Brain of Rat: III. E. S. Gurdjian, Rochester, N. Y.—p. 249.
Distribution of Nerve Cells in Ventral Columns of Spinal Cord. C. H. Craw, Toronto.—p. 283.

Kentucky Medical Journal, Bowling Green

26: 223-286 (May) 1928

Poliomyelitis. W. E. Gardner, Louisville.—p. 225.
Prenatal Care in Normal Pregnancy. W. T. McConnell, Louisville.—p. 234.
Surgical Treatment of Meningitis: Cases. R. G. Spurling, Louisville.—p. 242.
Indications for, and Technic of, Delivery by Normal Passages. W. Gossett, Louisville.—p. 250.
Treatment of Peptic Ulcer. H. T. Rivers, Paducah.—p. 256.
Blood Transfusion. L. W. Frank, Louisville.—p. 257.
Treatment of Fractures by Bone-Key Method: Four Cases. G. A. Hendon, Louisville.—p. 265.
Chronic Prostatitis: Treatment. O. Grant and J. R. Stites, Louisville.—p. 269.
Prostate Gland. H. B. Blaydes, LaGrange.—p. 275.
Dementia. T. G. Connell, LaGrange.—p. 277.

Laryngoscope, St. Louis

38: 295-370 (May) 1928

New Histopathologic Observations in Ear in Syphilis and Their Importance in General Pathology of Ear. G. Alexander, Vienna.—p. 295.
Constitutional Deafness: I. Definition. II. Elevation of Lower Tone Limit—New Conception. M. J. Gottlieb, New York.—p. 306.
Basilar Fracture of Skull with Temporal Bone Involvement. W. G. Shemeley, Jr., Philadelphia.—p. 312.
Mastoid Complications: Cases. H. C. Luke, New York.—p. 322.
Follicular Dental Cyst. H. M. Goodyear, Cincinnati.—p. 328.
Osteoma of Frontal Sinus: Two Cases. R. Harris, Memphis, Tenn. —p. 331.
Cavity with Fluid in Bony Nasal Septum and Crista Galli. V. J. Schwartz, Minneapolis.—p. 347.
Sequestrum of Superior Maxilla Following Typhoid. G. M. Van Poole, Honolulu, T. H.—p. 357.

Medicine, Baltimore

7: 105-290 (May) 1928

Epilepsy from Standpoint of Physiology and Treatment. W. G. Lennox and S. Cobb, Boston.—p. 105.

New England J. Medicine, Boston

198: 715-782 (May 24) 1928

Plans and Progress of Boston City Hospital. J. J. Dowling, Boston. —p. 723.
*Effects of Tonsillectomy on Acute Rheumatic Fever. W. H. Robey, Boston.—p. 724.
Suppurative Diseases of Lungs. H. Binney, Boston.—p. 725.
*Thebesian Vessels of Heart and Their Relation to Angina Pectoris and Coronary Thrombosis. J. T. Wearn, Boston.—p. 726.
Case of Malignant Disease in Vulva. N. R. Mason, Boston.—p. 727.
End-Results of Chronic Cholecystitis. E. L. Young, Jr., Boston.—p. 729.
Toxemia in Pregnancy. R. D. Margeson, Boston.—p. 735.
*Blood Monocytes in Children with Tuberculosis. P. M. Rogers, Seattle. —p. 740.
Determination of Blood Sedimentation Time with Capillary Blood. D. Davis, Boston.—p. 750.
*Use of Convalescent Measles Serum in Patients Exposed to Measles During Course of Scarlet Fever and Diphtheria. C. Wesselhoeft, Boston, and F. F. Gordon, Northampton, Mass.—p. 752.
Poliomyelitis Work in Vermont. C. F. Dalton, Burlington, Vt.—p. 755.
Electrosurgery. W. D. McFee, Haverhill, Mass.—p. 761.

Effects of Tonsillectomy on Rheumatic Fever.—Robey has found that tonsillectomy in these patients is as safe as any other surgical procedure, and he cannot see any difference, as far as the operation is concerned, between patients operated on during the height of rheumatic fever and those operated on during the intervals between attacks. He reports good results.

Relation of Veins of Thebesius to Coronary Thrombosis.—Wearn states that if the closure of the coronary arteries is brought about very gradually, the thebesian vessels can take up the function of these arteries and supply the heart muscle with blood. Most likely it is the sudden closure of the small terminal branch in coronary thrombosis that causes death, for, if the patients survive the first immediate attack, they will recover, very frequently, if placed at absolute rest in bed. This long rest probably enables the heart to recover. A similar rest is often advantageous in the treatment of angina pectoris. These long periods of rest enable the thebesian vessels to take up more of the duties of the coronary arteries.

Blood Monocytes in Tuberculous Children.—Nineteen counts were made by Rogers on a corresponding number of children with negative tuberculin tests. These were grouped into three age periods; the first, under 24 hours old; the second, under 1 year old, and third between 1 and 11 years old. The average monocyte lymphocyte ratios in the respective age groups were: first, 1:3.7; second, 1:11.6; third, 1:5.7. No modified monocytes or epithelioid cells were found in any of these groups. Three counts were made on children with negative tuberculin tests in whom there was reason to suspect the existence of tuberculosis. Modified monocytes or epithelioid cells were found in all three counts. Counts were made on nineteen children with positive tuberculin tests. Four of these children had very high monocyte lymphocyte ratios above 1:1.1. In three of these four, the existence of extensive active tuberculosis was found anatomically. The other fifteen children of this group had ratios below 1:1.1, and showed fair degrees of clinical resistance to tuberculosis. Epithelioid cells or modified monoyctes were practically always present in the blood stream of those children who responded positively to tuberculin tests. In one child of the last group there was a brief period in which the monocytes were more numerous than the lymphocytes. This was followed by a moderate eosinophilia. Peaks in the monocyte curves were usually accompanied by depressions in the lymphocyte curves, and were followed by slight eosinophilia.

Use of Convalescent Measles Serum.—Wesselhoeft and Gordon found that single doses of 5 cc. of convalescent measles serum proved efficacious in markedly reducing the severity of an epidemic of measles which invaded the scarlet fever and diphtheria wards. Among seventy-six patients exposed, twenty-five controls were not given serum and all twenty-five, or 100 per cent, came down with measles. Of these controls, sixteen (or 64 per cent of those exposed) had severe measles. Of the fifty-one exposed patients without a history of measles who were given convalescent serum, only fourteen contracted measles (or 27.4 per cent), and only one of these (or 1.9 per cent of those exposed and 7.1 per cent of the fourteen patients) had a severe rash. Bronchopneumonia occurred twice in the control group and once in the group treated with serum. Intubation for measles laryngitis was necessary once in each group. Of these two patients, the one in the control group died of bronchopneumonia, and the one treated with serum recovered without bronchopneumonia.

New York State J. Medicine, New York

28: 631-706 (June 1) 1928

Art of Medicine. J. E. Sadlier, Poughkeepsie.—p. 631.
Glycosuria from Standpoint of Significance. F. G. Brathwaite, New York.—p. 636.
Tularemia: Case. J. A. Murphy, Buffalo.—p. 645.
New Instrument for Excision of Diseased Endocervix with Surgical Diathermy. M. N. Hyams, New York.—p. 646.
Refined Technic of Spinal Anesthesia in Abdominal Surgery. J. Sarnoff, New York.—p. 649.
Frequency of Hypothyroidism in Adolescent and Colloid Goiter. J. W. Hinton, New York.—p. 654.
Paralaryngeal Abscess: Two Cases. J. W. Miller, New York.—p. 655.
Present-Day Social Care of Epileptic Patients. T. K. Davis, New York. —p. 656.
Treatment of Face Presentation by Kielland Forceps. S. P. Goldberg, New York.—p. 658.

Ohio State M. Journal, Columbus

24: 425-512 (June) 1928

Fixing Responsibility. L. L. Bigelow, Columbus.—p. 445.
Principles and Progress. C. W. Stone, Cleveland.—p. 450.
What is Proper Strength of Iodine Salt for Goiter Prophylaxis? H. G. Sloan, Cleveland.—p. 453.
Tularemia in Ohio. F. Berry, Columbus.—p. 457.
Hysterectomy and Extensive Resection of Bowel Necessitated by Accident During Curettage Following Abortion. K. Hale, Wilmington.—p. 460.
Pregnancy and Syphilis. I. J. Mehlman, Toledo.—p. 461.

Philippine Islands M. Association Journal, Manila

8: 155-206 (April) 1928

Goiter and Tumors of Thyroid Among Filipinos. C. Reyes, Manila.—p. 155.
Heliotherapy as Adjunct in Treatment of Tuberculosis. A. Trinidad, San Fernando.—p. 169.
Intra-Orbital Anesthesia in Enucleation of Eyeball. C. D. Ayuyao, Manila.—p. 173.
Yatren 105 in Amebic Dysentery. P. T. Lantin, Manila.—p. 178.
Publication of Philippine Pharmacopoeia. P. Valenzuela, Manila.—p. 181.

Physical Therapeutics, Baltimore

46: 215-272 (May) 1928

Goiter: Treatment by Physical Therapy. W. B. Snow, New York.—p. 215.
Physical Therapeutics in Pediatrics: Radiant Light and Heat in Treatment of Bronchopneumonia. M. R. Reynolds, Jackson Heights, N. Y. —p. 228.
Rheumatoid Arthritis. M. L. H. A. Snow, New York.—p. 236.
Physical Measures in Some Traumata of Back. M. A. Cohen, Boston. —p. 243.
Technic of Treatment of Sycosis Barbae by Means of Roentgen Rays. M. A. Lyons, New York.—p. 252.
University of Jena Plans for Institute of Physicotherapeutics. J. Grober and R. Riemerschmid, Cologne, Jena, Germany.—p. 255.

Public Health Reports, Washington, D. C.

43: 1259-1319 (May 25) 1928

Sex Differences in Incidence of Certain Diseases at Different Ages: Hagerstown Morbidity Studies: IX. E. Sydenstricker, Washington, D. C.—p. 1259.

Rhode Island Medical Journal, Providence

11: 89-104 (June) 1928

Focal Infection: Relation to Ophthalmology. F. J. McCabe, Providence. —p. 89.
Quarantine of Scarlet Fever Governed by Throat Cultures. E. V. Murphy, Newport.—p. 91.

Southern Medical Journal, Birmingham, Ala.

21: 421-504 (June) 1928

Treatment of Pulmonary Tuberculosis. L. J. Moorman, Oklahoma City. —p. 421.
Differential Diagnosis of Renal Tumors. W. F. Braasch, Rochester, Minn.—p. 425.
*Donovan Body of Granuloma Inguinale. J. A. McIntosh, Memphis, Tenn.—p. 434.
Portable Frame for Suspension and Traction of Fractures of Lower Extremity. G. A. Caldwell, Shreveport, La.—p. 438.
Nephrolithiasis. G. R. Livermore, Memphis, Tenn.—p. 443.
Compound Fractures. M. Bradburn, New Orleans.—p. 446.
*Cardiorrhaphy. F. R. Sherard, S. H. Stephens and J. T. Hutchens, Mobile, Ala.—p. 452.
*Relation of Gastric and Cardiac Affections. J. Friedenwald and T. H. Morrison, Baltimore.—p. 453.
*Relation of Pigment Content in Serum and Spinal Fluid of New-Born Infants. M. H. Roberts, Atlanta, Ga.—p. 460.
*Heart Disease in Negro Race. H. M. Davison and J. C. Thoroughman, Atlanta, Ga.—p. 464.
*Lobar Pneumonia in Negroes: Influence of Syphilis as Coexisting Disease. R. J. Reitzel, Galveston, Texas.—p. 469.
*Extensive Resection of Small Intestine. R. S. Cathcart, Charleston, S. C. —p. 471.
Two Cases of Suppurative Lymphadenitis of Mesentery of Small Bowel. J. S. Turberville, Century, Fla.—p. 475.
Roentgenology in Military Service. C. L. Maxwell, Washington, D. C. —p. 477.
Sodium Thiosulphate in Dermatology. J. W. Jones, Atlanta, Ga.—p. 481.
Treatment of Bronchial Asthma. H. C. Long, Knoxville, Tenn.—p. 485.
Trigeminal Neuralgia and Brain Tumor. R. E. Semmes, Memphis, Tenn. —p. 489.
Public Health Administration in Virginia. J. A. Tobey, New York.—p. 490.
Physical Examination of Railway Employes. H. N. Page, Augusta, Ga. —p. 493.
*Case of Scurvy Cured with Banana Diet. L. von Meysenbug, New Orleans.—p. 496.

Donovan Body of Granuloma Inguinale.—Experiments made by McIntosh tend to prove that the Donovan body is the cause of granuloma inguinale. The constant association of the Donovan bodies in the characteristic lesions of granuloma inguinale has been observed in the lesions reported, as well as in others coming under observation. One experiment tends to show there is no filtrable virus in the granulations of granuloma inguinale. But when the Donovan bodies are injected into man, a typical chronic ulcer develops at the site of injection. However, acute necrosis also occurs when other associated organisms in the lesions are injected at the same time. Healing occurs in a few days and later, around forty days, the characteristic chronic ulcer develops. A nine-day subculture from a 57-day-old primary culture of the material containing Donovan bodies, grown in inactivated human blood serum diluted with saline solution, when injected into a patient with an untreated spontaneous granuloma inguinale produced a chronic indurated lesion, smears from which showed an excessive number of large mononuclear cells on the thirty-fifth day. The experiment was interrupted to begin treatment. Because there was a beginning lesion developing at the site of injection of the subculture near the incubation period of forty days, the presence of the Donovan bodies in the injected subculture is suggested. If present, they were grown in vitro. Intravenous injection of antimony and potassium tartrate into man produces a progressive increase in the number of large monuclear cells in the circulation and enhances the phagocytic properties of this type for the Donovan bodies. It is believed that under the influence of the antimony stimulation the human body produces a sufficient number of large mononuclear cells capable of destroying the infecting organism called the Donovan body. The injection also causes a moderate increase of large mononuclear cells, but the number or quality is incapable of completely destroying the Donovan bodies. Hence, there is no spontaneous cure in granuloma inguinale. The drug is retained in the body for several weeks after administration, which adds to its value as a medicinal agent.

Cardiorrhaphy.—Sherard et al. report the case of a woman who sustained a stab wound in the left side of the chest. She was carried to the operating room about twenty minutes after she received the wound. The pleural cavity was opened and the heart exposed. The pericardial sac was distended, and when it was opened three clots of blood the size of a small lemon were removed and also some free blood—in all about 150 cc. The wound was in the lower third of the right ventricle, in the anterior wall, about 8 mm. in length, longitudinally. A guy stitch of catgut was placed in the muscular apex of the ventricle, just below the angle of the wound, and the heart was pulled to the left by gentle traction made on the guy stitch by the assistant. With the heart held in the left hand, four interrupted chromic catgut stitches were inserted in the muscle wall and tied, controlling the hemorrhage from the wound. The pericardial sac was closed by seven chromic catgut, interrupted stitches. A tube gauze drain was inserted in the pleural cavity and the ribs were replaced. The patient was discharged from the hospital forty-five days later.

Relation of Stomach and Heart Diseases.—Attention is directed by Friedenwald and Morrison to the intimate relationship between disturbances of the heart and of the gastro-intestinal tract. This is accounted for partly by the close anatomic relation between the digestive organs and by their nerve supply. An attempt is made to show that in cardiac diseases in which compensation is still established, gastro-intestinal disturbances are infrequently noted, while in the stage of decompensation severe gastro-intestinal symptoms are extremely apt to develop. In a certain group of cases, a close resemblance of the cardiac disturbance to some serious abdominal surgical emergency may even occur. In the study of cardiac and digestive conditions, therefore, it is of importance to bear in mind the reciprocal relation of these organs to one another in order to prevent serious errors in diagnosis.

Bilirubin Content of Blood and Spinal Fluid of Negro Infants.—The spinal fluid and blood serum of 152 new-born negro infants with syphilitic parents has been studied by Roberts to determine pigment content. The van den Bergh test for bilirubin gave a positive indirect reaction on all serums and on many of the deeper spinal fluids. The pigment content of the spinal fluid as measured by the icterus index varies directly with that of the serum and is approximately $\frac{1}{125}$ as great in amount. The concentration of pigment in both serum and spinal fluid shows a gradual rise to the third, fourth and fifth days, following which there is a gradual decline to normal by approximately the eighth day. Thirteen cases of intracranial hemorrhage were studied. The average pigment concentration in the serum was found to be only thirty times as great as that in the spinal fluid, a marked relative preponderance in the latter.

Heart Disease in Negro.—According to Davison and Thoroughman, heart disease occurs more frequently among the negro males than among the negro females. Rheumatic heart disease is the least common of all the infections causing cardiac disability. Syphilitic heart disease causes the greatest amount of disability, next to the arteriosclerotic group. Arteriosclerosis with hypertension, or hypertensive heart disease without demonstrable arteriosclerosis, is the cause of 60.1 per cent of all cardiac disease attended with a high mortality. The disability from heart disease is greater and requires longer hospitalization in the arteriosclerotic group than in any other. The mortality is unusually high because of the marked state of congestive heart failure in which these patients are received.

Syphilis and Lobar Pneumonia in Negro.—Reitzel insists that in all cases in which there is nonresolution a Wassermann test should be made and, if it is found to be positive, the patient should be promptly given antisyphilitic treatment. A higher death rate is found among those who have syphilis as a coexisting disease.

Extensive Resection of Small Intestine.—Cathcart reports a case of volvulus which had produced gangrene of more than 125 cm. of the ileum. It was necessary to resect 137.5 cm. of the ileum by means of an end-to-end anastomosis. The patient made an uninterrupted recovery and showed no symptoms of shock and little or no inconvenience during his convalescence. He left the infirmary in approximately two weeks, resumed his vocation (that of a clerk in the United Sates Post Office) within a month, and has been apparently in perfect health, not showing any evidence whatever of digestive disturbance.

Banana Diet in Scurvy.—A 19 month old baby, weaned at 4 months and put on a diet of pasteurized and boiled milk with no antiscorbutic, showed marked pallor, severe anemia, bleeding gums, a rapid heart with a systolic apical murmur and roentgen-ray changes typical of scurvy. Von Meysenbug diagnosed the condition as scurvy. One tablespoonful of banana, increased daily, was added to the diet, which was otherwise not changed and which did not contain any other antiscorbutic. The subsequent course showed a disappearance of the scurvy.

Southwestern Medicine, Phoenix, Ariz.

12: 187-236 (May) 1928

Treatment of Uterine Prolapse. H. S. Crossen, St. Louis.—p. 187.
Vaginal Hysterectomy for Prolapse. H. S. Crossen, St. Louis.—p. 200.
Lateral Sinus Thrombosis: Cases. J. J. McLoone, Phoenix.—p. 204.
Diagnosis and Treatment of Bronchiectasis by Injection of Iodized Oil. G. Turner, El Paso, Texas.—p. 206.
Medical Jurisprudence. M. Kemp, El Paso, Texas.—p. 209.
Psychoneuroses. S. D. Swope, El Paso, Texas.—p. 214.

Surgery, Gynecology and Obstetrics, Chicago

46: 735-882 (June) 1928

*Surgery of Pancreas: Acute Pancreatic Necrosis. V. Schmieden and W. Sebening, Frankfurt a. M., Germany.—p. 735.
*Uterosalpingography: Action of "Tubal Sphincter," New Syringe for Transuterine Injections: Therapeutic Use of Iodized Oils Within Uterus and Fallopian Tubes. J. Jarcho, New York.—p. 752.
*Benign Prostatic Hypertrophy: 1,000 Cases. V. C. Hunt, Rochester, Minn.—p. 769.
*Neuroblastoma of Suprarenal in Young Children. M. Wollstein, New York.—p. 774.
*Insulin-Dextrose Treatment of Traumatic Shock. E. C. Padgett and T. G. Orr, Kansas City, Kan.—p. 783.
*Defensive Factors in Carcinoma of Breast. P. G. Flothow, Rochester, Minn.—p. 789.
Gallbladder Disease in Young Subjects: Analysis of 226 Cases. A. H. Potter, Springfield, Ohio.—p. 795.
*Brain Flap. R. St. A. Heathcote and A. K. Henry, Cairo, Egypt.—p. 809.
Fusion of Spinal Column. N. Allison, Boston.—p. 826.
Intra-Abdominal Incision of Vaginal Vault for Drainage. G. Baeten, Ghent, Belgium.—p. 830.
After-Treatment of Pelvic and Abdominal Surgical Cases. R. Worrall, Sydney, Australia.—p. 832.
Surgical Importance of Roengen-Ray Examination of Esophagus and Pharynx. A. Eiselsberg and M. Sgalitzer, Vienna.—p. 837.
*Enlargement of Parturient Canal by Bone Graft. F. H. Albee, New York.—p. 845.
Stenosing Fibrous Tendovaginitis Over Radial Styloid (De Quervain). C. C. Schneider, Milwaukee.—p. 846.
*Subperitoneal Cholecystectomy. L. R. Whitaker, Rochester, N. Y.—p. 851.
*Injured Pelvic Floor: Secondary Reconstruction. B. H. Goff, New York.—p. 855.
Method of Assisting in Treatment of Disproportion and Modified Method for Estimating Relation of Fetal Head to Pelvis. B. Solomons, Dublin, Ireland.—p. 867.
New Anal Instruments. W. D. Pennington, Chicago.—p. 868.

Acute Pancreatic Necrosis.—Schmieden and Sebening conclude as follows: Acute pancreatic necrosis is a disease of high mortality, with varied pathogenesis and etiology. In the etiology, diseases of the biliary tract are of the greatest significance. The genetic connection between bile duct diseases and acute pancreatic necrosis affords special consideration regarding diagnosis, therapy and prophylaxis. The pancreas should be considered as an organ extremely susceptible to operative trauma and should be guarded against any possible injury, especially during the course of operations on the gallbladder, stomach and spleen. A present-day mortality of 51.2 per cent was found in compiled statistics in 1,278 cases during the last eight years. Only in early operations is it possible to achieve the best results in acute pancreatic necrosis. Systematic postoperative examinations of the patients who have been operated on for acute pancreatic necrosis are necessary because of the large number of complications which may develop.

Uterosalpingography.—Jarcho's experience leads him to believe that the transuterine injection of iodized oil may have definite therapeutic advantages in subacute and chronic conditions of the fallopian tubes. A case is described in which uterosalpingography revealed dilatation and occlusion of both fallopian tubes but in which a second uterosalpingography ten months later gave an entirely normal picture. There is reason to believe that, in this case, the slow liberation of iodine within the fallopian tubes had a pronounced therapeutic effect. A new syringe equipped with a manometer and specifically adapted to the transuterine injection of iodized oil is described.

Benign Prostatic Hypertrophy.—The point is emphasized by Hunt that benign prostatic obstruction is largely a medical condition; a surgical condition is present, but there are aspects which may best be appreciated by the physician. Only through the combined interest and cooperation of the internist, urologist and surgeon can the patient be operated on with the minimal risk and the assurance of the best functional result.

Neuroblastoma of Suprarenal.—In a series of nine sympathicoblastomas of the suprarenal medulla in young children reported on by Wollstein, three contained areas of ganglioneuroma in parts of the tumor. One such tumor metastasized very generally to the bones, dura and liver. The two others were removed by operation before metastases occurred. Both children recovered from the operation and one is alive a year and five months afterward, the only one on record to survive so long. In seven of the nine, the tumor proved inoperable when first diagnosed.

Insulin-Dextrose Treatment of Traumatic Shock.—Padgett and Orr state that from the experimental standpoint the dextrose-insulin treatment of shock recently advocated by Fisher seems to be no more beneficial than treatment with a hypertonic solution of dextrose or sodium chloride.

Defensive Factors in Carcinoma of Breast.—Flothow points out that the preponderance of evidence indicates that cellular differentiation, fibrosis, hyalinization and lymphocytic infiltration are nature's defensive mechanism against carcinoma. While these no doubt are not the only means of defense, they are probably the most important. They play a definite and distinct part in retarding the growth of carcinoma in the breast. They are not present in every case, and vary considerably in degree and thus in effectiveness. If, following amputation in a case without involvement of lymph nodes, all the defensive factors are found present, a good prognosis is justified; if they are not present, it is still not good, but certainly better. The results emphasize more than ever the necessity of early diagnosis and radical amputation for carcinoma of the breast.

Brain Flap.—A phenomenon of extensive changes in intracranial volume, synchronous with respiration in man, with the experimental production of a similar condition in dogs, is described by Heathcote and Henry under the term brain flap. In an animal just after death, great changes in intracranial volume can be produced, after the chest is opened, if the heart is alternately squeezed and relaxed. These changes from the mechanical conditions must be opposite in sign to those of brain flap. The condition is dependent on changes in the intracranial content of blood. The volume of a brain which exhibits this condition diminishes with inspiration and increases with expiration. Dyspnea is a constant factor in its production, both clinically and experimentally. In the presence of dyspnea, the condition may occur with systemic blood pressures ranging from 140 to 40 mm. of mercury. Brain flap is cut short by the marked rise of arterial blood pressure, caused by the intravenous injection of epinephrine. Within fairly wide limits, brain flap does not seem to be dependent on arterial pressure. The immediate cause of brain flap would appear to be an imbalance between the quantity of blood entering and leaving the cranial cavity from moment to moment. It is certain that one, and probably the main, factor in this imbalance is the excessive aspiration of blood from the veins by the chest during dyspneic respiration. It is probable: (*a*) that a relatively deficient inflow to the cranial cavity from the arterial side may be an essential factor, and (*b*) that while a high pressure of the cerebrospinal fluid will damp the movements of the brain, a fall in pressure may permit them to appear.

Bone Transplant to Enlarge Pelvis.—Two cases are reported by Albee in which he has enlarged the pelvic diameters by placing in each patient an inlay graft between the right and left pubic bones, after forcing them apart 1½ inches. In both cases the desired result was obtained: the ability to bear children by normal delivery.

Subperitoneal Cholecystectomy.—The principle of the operation employed by Whitaker experimentally on dogs is removal of the gallbladder through a small abdominal incision by subperitoneal dissection from above downward to the cystic duct. This depends on the anatomic fact that the peritoneal covering is very loosely attached to the gallbladder. The gall-

bladder is dissected out of its covering which remains as a sac, in the bottom of which lies the cystic duct. The duct is easily ligated and tied. The peritoneal sac is then collapsed around a rubber drainage tube.

Reconstruction of Injured Pelvic Floor.—The operation described by Goff consists of the following steps: (1) incision of the rectovaginal septum; (2) removal of the rectum from the herniated portion of the rectovaginal septum; (3) excision of the herniated portion of the rectovaginal septum; (4) closure of the hernial opening in the rectovaginal septum; (5) denudation of the perineum; (6) replacement of the lavator ani, and (7) reconstruction of the perineum.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 789-832 (May 12) 1928

Pathogenesis of Acute Primary Glaucoma. A. M. Ramsay.—p. 789.
Professor Calmette's Statistical Study of B C G Vaccination. M. Greenwood.—p. 793.
Vital Capacity in Heart Disease. H. W. Jones.—p. 795.
*Oral Administration of Pancreatic and Other Preparations in Treatment of Diabetes. C. B. S. Fuller.—p. 798.
*Massive Dosage with Insulin. H. A. Byworth.—p. 801.
Full-Time Abdominal Pregnancy: Prolonged Suppuration: Recovery. A. J. Keevill.—p. 801.
Hydatid Cyst in Heart. H. L. Heimann.—p. 801.
Mercury Salicylate Injections in Chronic Ulceration. E. W. Lynch.—p. 802.
Some Comments on Case of Tyndall vs. Alcock: Origin of Ischemic Contracture. E. W. Hey Groves.—p. 807.

Oral Administration of Pancreas Preparations in Diabetes.—From the data given by Fuller it is clear that the administration of oral preparations of pancreas in severe cases of diabetes is a waste of time, and likely to be harmful to the patient by delaying the proper treatment with diet and insulin injections. As regards the milder cases, in none of the patients could any definite improvement be traced, either in the clinical condition of the patient or in the blood sugar levels. In those patients in whom blood sugar curves were taken over several hours no definite difference in the mean blood sugar level could be detected as the result of treatment with oral preparations. In fact, all the results point to the conclusion that the oral preparations tried are of no value in the treatment of diabetes, and that probably the improvement attributed to the oral preparations has in reality been due to the strict diet the patient was put on at the same time. In other words, the patient would have done equally well if put on the diet alone. The only value these preparations seem to possess is a psychic one, as some patients, if placed on a strict diet alone, feel that they are not receiving proper treatment.

Massive Dosage with Insulin.—Byworth cites a case of diabetes mellitus in which 1,300 units of insulin was given in one day. In all, the patient received 1,715 units of insulin in thirty-six hours. His dose of insulin was subsequently reduced, and he was discharged from the hospital, having gained in weight, and being able to maintain himself on a sufficient diet with the help of 110 units of insulin daily.

1: 833-884 (May 19) 1928

Immunization Against Diphtheria, Scarlet Fever and Measles. S. M. Copeman.—p. 833.
Fungous Infections of Hands and Feet. R. Hallam.—p. 835.
*Treatment of Malignant Disease by Colloidal Lead. S. Wyard.—p. 838.
*Syphilis of Heart. I. Harris.—p. 840.
Some Fundamental Factors in Treatment of Pulmonary Tuberculosis. S. H. Stewart.—p. 842.
*Bronchopneumonia in Children Treated by Injections of Emetine Hydrochloride. C. R. Wilson.—p. 844.
Sarcoma of Stomach. A. H. Heslop.—p. 845.
Case of Polydactylism in Foot. A. E. Sawday.—p. 846.

Value of Colloidal Lead in Malignant Disease.—Of forty patients who have received 0.2 Gm. or more of colloidal lead intravenously, only one has shown any improvement, while the majority are dead or obviously much worse than before treatment. So far, then, as Wyard's observations go there is no support for the statement that colloidal lead exerts a beneficial influence on the progress of a malignant growth. Moreover, it is certainly a difficult and dangerous therapeutic method.

Syphilis of Heart.—In Harris' opinion there is no alternative but to adopt the Wassermann test as a routine procedure for all patients suffering from heart disease. A positive reaction, particularly in a patient with some cardiac trouble, ought to be sufficient indication for a prolonged course of antisyphilitic treatment.

Use of Emetine Hydrochloride in Bronchopneumonia.—While not acclaiming the use of emetine as a specific remedy, Wilson says it certainly appears to be of clinical value. In children the effect gained by the daily injection saves in many instances a struggle with the child to get it to take medicines by the mouth, thus giving the patient and attendant alike a more restful time. For this alone it should be a valuable method for the general practitioner, as difficulty in this direction is only too often present owing to amateur nursing. The febrile period of the disease appears quite definitely shortened when the average of cases is taken. The stomach is left free from any irritation by expectorants and is given a better chance with such nourishment as may be taken. The daily dosage used in this series of fifty cases was roughly: Age up to 4 years, 1/6 grain (7 mg.); 4 to 10 years, 1/3 grain (11 mg.); 10 to 15 years, 1/2 grain (20 mg.). These were used as initial doses, but each case had to be judged by its reaction. In the majority of cases these amounts were found quite adequate to produce effects. The salt of emetine used was the hydrochloride, this being the most readily soluble, and the suitable quantity was administered daily by hypodermic injection. The number of doses administered in any one case in the series varied from two to nine. In the main it was found that if at the end of six daily injections of the drug the patient had not shown definite signs of improvement in regard to temperature, pulse, respiration and the clinical picture, little further benefit was to be expected from its use. In a number of cases the doses were discontinued short of six.

Lancet, London

1: 999-1054 (May 19) 1928

Harvey as Anatomist. A. Keith.—p. 999.
*Cost to Country of Industrial Rheumatism. W. S. Kinnear.—p. 1001.
Rheumatic Disease. F. Bezançon and M. P. Weil.—p. 1002.
Influence of Environment on Rheumatic Infection in Childhood. R. Miller.—p. 1005.
Cicatrical Stenosis of Esophagus: Three Cases. L. Sewell.—p. 1008.
*Congenital Morbus Cordis: Case Studied over Period of Twelve Years. F. Bach.—p. 1009.
Early Diagnosis of Primary Perinephric Suppuration. S. A. Lane.—p. 1011.
Case of Glass Fragments in Knee. A. H. Bizarro.—p. 1011.
Jaundice from Focal Necrosis of Liver. C. E. Newman.—p. 1012.

Economic Aspects of Rheumatism.—In 1927, the total sickness and disablement benefit payments made by approved societies in England, Scotland and Wales amounted to about $97,200,000. This represented about 34 million weeks of incapacity for which benefit was paid. If due allowance is made for incapacity occurring in the initial period of sickness, when no benefit is payable (i. e., the waiting days), it is probable that the total incapacity amounted to about 35 million weeks, the proportion due to rheumatism being about 5½ million weeks. The corresponding cost of medical services and the administration of insurance committees and approved societies in 1927 was about $68,040,000. A little over $24,300,000 was the approximate disbursement made under the national health insurance scheme in Great Britain during 1927, on account of rheumatism. If to the foregoing is added the amount of wages lost to insured persons through rheumatism on the basis of an average wage of from $12 to $13.20 a week (man) and from $6 to $7.20 a week (woman), the $24,300,000 requires to be increased by about $58,320,000, making a total of $82,620,000 in all. This vast sum then represents approximately the yearly disbursements under the national health insurance scheme to insured persons on account of rheumatism together with the accompanying loss of wages. It does not include any sum for the cost of the medical treatment of persons suffering from rheumatism who are not totally incapable of work, for the cost of nursing in bad cases, or for the cost of any necessary institutional treatment. Further, it does not cover fully persons over the age of 70, the relative cost in respect of whom must be heavy in

view of the rapid increase in the severity of the disease with age, nor does it make any allowance for dependents of insured persons, all of which, Kinnear believes, should if possible be taken into account in assessing the cost of rheumatism to the country.

Atresia of Pulmonary Artery.—Bach reports the case of a man who was weakly, pale and short of breath from early childhood; who at the age of 18 came under medical observation, and who, until his death at 30, was under regular medical supervision. He was deeply cyanosed, had frequent attacks of giddiness and often became unconscious. The necropsy established the presence of atresia of the pulmonary artery. The heart did not appear enlarged. On examination of the external surface a single vessel appeared to arise from both ventricles; this proved to be the aorta. The right ventricle was enlarged, and the musculature was hypertrophied so that its wall equaled that of the left in thickness. In the substance of the upper part of the anterior wall of the right ventricle a separate cavity, measuring about 1½ inches by ½ inch, was found. This proved to be the bulbous cordis, existing as a separate chamber, as normal fusion with the right ventricle had not taken place. This chamber was found to communicate with the right ventricle by a small aperture, through which a probe could just be passed. The tricuspid and mitral valves appeared to be normal. The foramen ovale was a comparatively wide slitlike orifice, and the interventricular foramen was the size of a shilling. The aorta arose from the right ventricle; the circumference of the first part was slightly greater than normal. The valves were normally formed and healthy. There was only one coronary artery, which arose from the normal position of the right coronary artery. The intima of the aorta showed slightly early atheromatous changes. The ductus arteriosus was closed. Arising in the musculature of the right ventricle, immediately to the left of the aorta and immediately superior and anterior to the bulbus cordis, a very small pulmonary artery was found. There was no communication between it and the bulbus cordis. There were three malformed valves, suggesting arrested development at about the third week of intra-uterine life; immediately distal to these, the pulmonary artery widened slightly.

1: 1055-1106 (May 26) 1928

Addison's Disease: Alkaptonuria: Hematoporphyria: Dystrophia Myotonica: Gaucher's Disease. A. Garrod.—p. 1055.
*Relapses in Scarlet Fever. A. H. G. Burton and A. R. Balmain. —p. 1060.
*Secondary Anemia Treated with Liver or Liver Extract. J. Vaughan. —p. 1063.
*Blood and Plasma Volumes in Pernicious Anemia. O. L. V. de Wesselow and J. Bamforth.—p. 1066.
*Reticulocyte Crisis and Serum Bilirubin in Pernicious Anemia. S. C. Dyke and J. Greener.—p. 1068.
*Liver Feeding in Multiple Infective Arthritis. V. Coates and J. L. Delicati.—p. 1069.
*Diagnosis of Pernicious Anemia by "Blood Halos." F. C. Eve.—p. 1070.
*Intestinal Bacteria Isolated from Packed Dates. R. F. Hunwicke and G. N. Grinling.—p. 1071.
Operation for Cure of Prolapse of Rectum in Female. F. J. McCann. —p. 1072.

Relapses in Scarlet Fever.—Among 432 cases of scarlet fever treated with concentrated scarlet fever antitoxin there were eighteen true relapses. The majority occurred in young children. Only six complications developed after the primary attack in these cases, compared with twenty-three complications which occurred after the relapses. The majority of the patients were up and in the convalescent ward at the time of the relapse. Thirteen of the relapses took place between the twenty-second and fifty-first day. Only one occurred before the beginning of the fourth week. The Dick test was found in four cases to be negative at various periods after the relapse and to remain negative. In three cases it was positive before and after the relapse. In one case the immunity varied after the relapse. The results emphasize the necessity of convalescent wards. Although most of the relapses recorded occurred in convalescent wards, there is no doubt in the minds of Burton and Balmain that if these patients had been in contact with children with acute cases throughout their illness the number of relapses would have been markedly increased.

Liver Treatment of Secondary Anemia. — Vaughan reports on thirteen cases of pernicious anemia; seven cases of anemia secondary to hemorrhage, and five cases of anemias unassociated with hemorrhage. The last five cases suggest that liver is probably ineffective in leukemia and advanced carcinoma, but that it is worth a prolonged trial in secondary anemias without obvious cause.

Blood and Plasma Volume in Pernicious Anemia.—In eleven cases reported on by de Wesselow and Bamforth the rapidity of the response to liver treatment has varied, but there was immediate subjective benefit even in one patient whose objective improvement was delayed. The final red cell counts are higher than those observed by any other method of treatment, and the uniform fall in the color index may be regarded as a favorable sign. The relationship of cell volume to cell count runs a course similar to that of the color index. The absolute plasma volumes show a considerable degree of constancy in each patient during the progress of treatment, with a slight tendency to fall during the later stages of improvement. A definite fall in plasma volume relative to body weight may occur, but such falls are mainly the reflection of the increase in body weight which occurs on the liver diet; patients suffering from pernicious anemia are usually considerably below their normal weight when they first come under observation. A considerable gain in weight occurred in all patients with one exception. There appears to be a definite tendency to compensate for the large diminution in the total blood volume due to the fall in the red cell volume in this disease by a corresponding increase in the plasma. The plasma volume remains normal.

Reticulocytes and Serum Bilirubin in Pernicious Anemia.—The reticulocyte count constitutes a very important means of ascertaining early whether or not a given case of pernicious anemia will respond to treatment by liver. Dyke and Greener state that a rise in the proportion of reticulocytes to red cells occurs within three days of the commencement of treatment in cases responding satisfactorily. Within a week the reticulocytes should have reached their maximum, which may be more than 30 per cent of the red cells; the number of reticulocytes then falls rapidly and within three weeks from the beginning approaches normal. An increase is obvious before the increase of the ordinary red cells has become definite. In order to avoid missing the "crisis," counts must be made at the commencement of treatment at intervals of less than three days. A fall in the serum bilirubin is another early manifestation and would probably indicate response to treatment as well as the reticulocyte count. The sudden and dramatic drop in the bilirubin content of the serum is an obvious indication that one factor in the response to treatment is the cessation of abnormal hemolysis. The reticulocyte crisis early in treatment is an indication that numerous young red cells are thrown into the circulation as a result of treatment. That the progressive improvement under the treatment is not due to the continuation of this inflow is shown by the early drop of the reticulocyte percentage to normal, though the rate of increase of the red cells remains steady.

Liver Feeding in Multiple Infective Arthritis.—Coates and Delicati studied the effect of liver feeding in infective arthritis in which moderately severe to severe secondary anemia is an almost constant feature. It would appear that certain patients suffering from infective arthritis benefit extraordinarily, in respect of improvement in the blood count, after liver feeding, whereas others are unaffected. A feature of note is that of the eleven cases which improved, seven showed a marked rise in the polymorphonuclear count with a corresponding fall in the lymphocytes, whereas of the four cases which retrogressed, three showed the converse.

Blood Halos in Pernicious Anemia.—The investigation of sixty cases has convinced Eve that the camera blood halo method is quick, easy and reliable, yielding decisive clinical information in cases suspected of being pernicious anemia and subacute combined degeneration of the cord, which is otherwise available only with difficulty and labor.

Intestinal Bacteria in Packed Dates.—Hunwicke and Grinling examined eleven samples in all, four being block dates and seven dates repacked in fancy boxes. The block dates were all free from intestinal bacteria, no growth being obtained in MacConkey broth from any sample. From the packed dates a bacillus of intestinal type was isolated in every case except one, in which a lactose-fermenting yeast was present.

Bulletins et Mém. de la Soc. Méd. des Hôpitaux, Paris

52: 787-830 (May 24) 1928

*Association of Malignant Lymphogranuloma and Tuberculosis. N. Fiessinger and R. Cattan.—p. 787.
*Id. L. Boidin and Hamburger.—p. 794.
General Paralysis Three Years After Chancre. L. Marchand and A. Courtois.—p. 797.
Milk as a Therapeutic Agent. M. Renaud.—p. 801.
Colon Bacillus Anemia in Pregnancy. E. Lévy-Solal and A. Tzanck.—p. 813.
Generalization of Sarcoma Following Vaccination. E. Sergent, R. Turpin and H. Durand.—p. 816.
Effect of Antisyphilitic Treatment on Blood Pressure. A. Sézary and J. Heitz.—p. 822.
Abdominal Auscultation in Gastric Dilatation. G. Hayem.—p. 829.

Association of Malignant Lymphogranuloma and Tuberculosis.—Fiessinger and Cattan report a case of Hodgkin's disease associated with tuberculosis in a man, aged 27. The condition began suddenly with the appearance of several nonpainful enlarged glands in the subclavicular fossae. The clinical picture became increasingly complicated due to the appearance of symptoms of both malignant granuloma and tuberculosis. At the time of the patient's death, five months later, the differential diagnosis between Hodgkin's disease and tuberculosis had not been made. Necropsy revealed the presence of both conditions.

Malignant Lymphogranuloma Associated with Caseous Tubercles of the Spleen.—Boidin and Hamburger report another case in which typical lesions of both malignant lymphogranuloma and tuberculosis were found in the same patient at necropsy.

Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

54: 601-638 (May 5) 1928. Partial Index

Dangers of Hysterography by Intra-Uterine Injection. P. Duval.—p. 603.
*Delayed Traumatic Apoplexy. Fey and Auvray.—p. 605.
Pyosalpinx with Fistula into Bladder. Gouverneur.—p. 613.
*Excision of Inoculation Wound in Tetanus. G. Leclerc.—p. 619.
Spinal Anesthesia. E. Juvara.—p. 624.

Delayed Traumatic Apoplexy.—Auvray reports a case of delayed traumatic epilepsy observed by Fey in a man, aged 50, who had fallen from a ladder and had struck his head in the right parieto-occipital region. After being unconscious for fifteen minutes, he got up, refused treatment, and went back to work. Not until exactly two months after the accident did the first signs of increased intracranial pressure develop. Five days later, and in spite of surgical intervention, he was dead. At the operation a large hematoma was evacuated but the source of the bleeding could not be found.

Excision of Inoculation Wound to Complement Serum Treatment of Tetanus.—Leclerc describes a case of severe tetanus in which recovery followed excision of the inoculation wound, already cicatrized, at a time when a fatal outcome seemed inevitable.

Comptes Rendus de la Société de Biologie, Paris

98: 821-896 (March 23) 1928. Partial Index

Meinicke's Test in Cerebrospinal Fluid Examinations. S. Mutermilch and E. Salamon.—p. 822.
*Iron Content of Blood in Acute Asphyxia. L. Binet and P. Fleury.—p. 825.
*Multiplication of Virus in Tissue Culture. A. Carrel et al.—p. 827.
Cytology of Human Corpus Luteum. R. Horrenberger.—p. 849.
Method for Staining Spirochetes. E. Renaux.—p. 866.
*Action of Ultraviolet Rays on Parasympathetic Nervous System. L. Garot.—p. 867.
*Effect of Ultraviolet Rays on Blood Pressure. L. Garot.—p. 871.

Increased Iron Content of Blood in Acute Asphyxia.—Binet and Fleury examined blood from the splenic artery and from the splenic vein during asphyxia in splenectomized and in normal dogs. In the splenectomized animals practically no change in the iron content of the blood or in the erythrocyte count was noted, whereas in the nonsplenectomized animals a very striking increase in both was observed. These facts confirm the active intervention of the spleen during asphyxia: its contraction results in the passage into the circulation of blood with a high iron content and a high erythrocyte count.

Multiplication of Virus of Vesicular Stomatitis of Horse in Tissue Cultures.—Carrel et al. left some pieces of tissue from various organs of a guinea-pig for from one and one half to twenty-four hours in a Tyrode solution containing the filtrable virus of vesicular stomatitis. These tissues were then cultured for from seven to ten days. At the end of this time, the cultures were inoculated into guinea-pigs. In two of the experiments it was found that the virus was no longer active. The authors consider that this was probably due to the fact that the very rigorous conditions necessary for the conservation of the virus outside the organism had not been attained. In the three other experiments, the virus not only had remained active but had multiplied. Its activity had increased from ten to 1,000 times.

Decreased Tonus of Parasympathetic Nervous System Produced by Ultraviolet Rays.—As a result of observations on eight patients, Garot concludes that ultraviolet rays applied over a long period of time produce in the majority of persons a marked and lasting lowering of the tonus of the parasympathetic nervous system.

Effect of Ultraviolet Rays on Blood Pressure.—Garot subjected eight children to a course of from ten to fifteen ultraviolet-ray treatments, each lasting from two to fifteen minutes. As a result of blood pressure determinations made before and after each sitting, he concludes that ultraviolet rays have no manifest action on the blood pressure of children.

Gazette Hebdomadaire des Sciences Méd. de Bordeaux

49: 305-320 (May 13) 1928

*Fractures of Transverse Processes of Lumbar Vertebrae. G. Jeanneney.—p. 311.

Bilateral Fractures of Transverse Processes of Lumbar Vertebrae and Traumatic Lumbago.—Jeanneney reports the case of a man in whom all the lumbar transverse processes on the right side and the third and fourth lumbar processes on the left side were fractured in a fall. In spite of this, there were no signs of contusion in the lumbar region. Bending to either side or forward was impossible on account of the pain. The author believes that even marked lateral displacement of the fragment is of less consequence than vertical displacement, in which the spinal nerves may be compressed and cause primary symptoms or may become included in the callus and cause secondary symptoms. The diagnosis is most frequently made roentgenologically. The condition should be considered in all cases in which there is a contracture of the sacrolumbar mass of muscles with pain at the level of the transverse processes. Ordinarily, the symptoms disappear after a time but in some cases the fragment or a vicious callus compresses the root of a spinal nerve and produces traumatic lumbago or sciatic neuralgia. The prognosis depends more on the nature of the fractures than on their number, vertical displacements being more serious than transverse ones. The treatment usually consists in the application of a plaster-of-paris cast. In some cases, vertical displacement can be corrected by immobilizing the patient in lumbar scoliosis. In cases in which compression of one or more nerve roots is present, surgical removal of the offending fragments is indicated.

Journal de Chirurgie, etc., Brussels

26: 209-239 (Dec.) 1927

Lymphoma of Eyelids: Case. Loicq.—p. 212.
Importance of Radiography in Goiter. Moreau.—p. 214.
*Splenectomy in Purpura Hemorrhagica. De Leeuw.—p. 215.
Suture of Radial Nerve. P. Martin.—p. 224.
*Salivary Calculus in Wharton's Duct. R. Bourg.—p. 229.

Splenectomy in Purpura Hemorrhagica.—De Leeuw describes a case of severe purpura hemorrhagica in which a cure was effected by splenectomy. The article contains a table giving the blood findings before and after operation.

Salivary Calculus in Wharton's Duct.—Bourg describes a case of calculus in Wharton's duct in a man, aged 32. For five years the patient had been bothered by a slight swelling in the submaxillary region and in the floor of the mouth on the left side. For a year the disturbance had been so marked that he had been unable to swallow solid food. A purulent discharge from the orifice of the duct under the tip of the tongue had been noted for six months, and the patient himself had facilitated the evacuation of the pus by compressing the gland. Examination showed a swelling of the submaxillary gland on the left side

and on palpation with one finger inside the mouth and another outside, a hard mass could be felt. When the gland was compressed a brownish seropurulent liquid escaped from the opening of the left Wharton duct. In exploring this duct no resistance was met, in spite of the fact that the sound was introduced to a depth of 6 cm. Radiography disclosed the presence of a large calculus within the gland. At first an attempt was made to remove the stone through an incision in the mouth, but this was unsuccessful. At a second operation it was removed through a skin incision along the outer part of the lower edge of the mandible.

Paris Médical

67: 437-468 (May 19) 1928

*Tumors of Ampulla of Vater. P. Carnot.—p. 437.
Experimental Bile Salt Cholemia. E. Chabrol and M. Maximin.—p. 444.
Clinical Aspects of Syphilis of Liver. H. Boucher.—p. 449.
*Treatment of Hepatic Insufficiency. C. Dreyfus.—p. 456.
Regulation of Insulin Secretion by Pancreas. R. Gayet.—p. 459.
Biliary and Pancreatic Dissociation. P. Carnot, Hanotte and E. Libert. —p. 462.
Cholecystography. Nemours-Auguste.—p. 464.

Tumors of Ampulla of Vater Producing Intermittent Jaundice.—Carnot reports two cases of epithelioma of the ampulla of Vater producing at first intermittent and then persistent jaundice. These tumors can usually be differentiated from tumors involving the biliary passages or the head of the pancreas by reason of the fact that in the latter two conditions the icterus is progressive and persistent from the beginning.

Treatment of Parenchymatous Diseases of the Liver.—Dreyfus discusses two cases of liver insufficiency in which a carbohydrate diet and insulin therapy resulted in marked improvement in the patients' condition.

Presse Médicale, Paris

36: 609-624 (May 16) 1928

*Epidemic of Ringworm of Body. P. Ravaut, Basch and Rabeau.—p. 609.
*Diagnosis of Brain Tumor by Ventriculography. C. Vincent, P. Cossa and M. David.—p. 612.
Diagnosis of Bronchial Stenoses. R. Huguenin and A. Soulas.—p. 614.
Roentgenologic Diagnosis of Permeability of Fallopian Tubes. C. Béclère. —p. 617.

Epidemic of Ringworm of the Body.—From 1923 to 1927 Ravaut et al. were consulted for ringworm of the glabrous skin by 194 out of 1,000 women working in a government department. The parasite, *Trichophyton niveum radians,* was in all probability introduced there by a cat. Its spread resulted from the habit of the women of throwing their coats in piles on arriving at work. The epidemic was promptly stopped by sterilizing every coat and giving each woman an individual clothes hook.

Diagnosis of Brain Tumor by Ventriculography.—Vincent et al. performed sixteen ventriculographies on nine patients: several were injected two or three times, either because of an occlusion of the foramen of Monro which necessitated the injection of each ventricle separately or because of the injection of insufficient air the first time. Seven of the cases are discussed briefly and twelve roentgenograms are reproduced. Of these seven patients, three had frontal, two temporal, one an occipital and one a cerebellar tumor. In one of the cases of frontal tumor and in the case of occipital tumor a partial error in localization was made, but in the rest of the cases the diagnosis was either made on the basis of the ventriculography or was confirmed by it.

Diagnosi, Pisa

8: 49-94 (March) 1928

*Caronia Vaccine in Treatment of Typhoid. F. Costanzi.—p. 49.

Caronia Vaccine in Treatment of Typhoid.—Costanzi gives condensed case histories of 120 patients with typhoid, in whom the Caronia vaccine was employed; this vaccine has a certain specificity of action demonstrable in the behavior of the subjects treated and in the clinical course of the typhoid. The mechanism of the action does not differ from that of other vaccines. While it rarely has any harmful effects, its use shortens the course of the disease or relieves the symptoms to such an extent that the patients recover without becoming cachectic. It is not advised for all cases.

Giornale di Clinica Medica, Parma

9: 1-46 (Jan. 20) 1928

*Malaria Treatment of General Paralysis. E. Rizzatti.—p. 1.
*Recurrent Endocarditis and Meningococcus Sepsis. M. Massa.—p. 19.
Gastric Acid Values As Affected by Method of Testing. C. Secco and C. Bonuzzi.—p. 26.

Malaria Treatment of General Paralysis.—Rizzatti thinks that malaria treatment of general paralysis gives at least 40 per cent of good results, with a mortality of 10 per cent, at the most. He has found that the tertian type gives the smallest number of deaths and the greatest number of successes, since it induces high fever, few secondary accidents, and is the most amenable to quinine. A rigorous physical examination should always precede the treatment.

Recurrent Endocarditis and Meningococcus Sepsis.—Massa reports a case in a man, aged 23, in which septicemia occurring in a flare-up of chronic endocarditis was due to the meningococcus (Gordon's type II). If one assumes that the same organism was the agent of the endocarditis and later of the protracted sepsis, the case confirms the possibility of the meningococcus producing infection of the endocardium without involving the meninges.

9: 47-86 (Feb. 10) 1928

Case of Subphrenic Abscess of Obscure Origin. F. Giugni and G. Poggi.—p. 47.
Anisocoria in Abdominal Syndromes. G. Donini.—p. 50.
*Endothoracic Deposits of Calcium Salts. L. Armani.—p. 60.
Radiologic Studies on Paravertebral (Grocco's) Triangle. L. Manini. —p. 67.
Form and Topography of Gallbladder in Relation to Constitution. P. Perona.—p. 75.

Endothoracic Deposits of Calcium Salts.—In three aged patients (70, 65 and 71, respectively) Armani found endothoracic deposits of calcium salts associated with abdominal neoplasms. He does not feel authorized to draw any deductions.

Pediatria, Naples

36: 451-506 (May 1) 1928

*Intradermal Smallpox Vaccination. A. Pinelli.—p. 451.
*Hemoglobinuria in Children with Malaria. G. Genoese.—465.

Intradermal Smallpox Vaccination.—Pinelli found that the intradermal method of vaccination for smallpox confers the same immunity as the percutaneous method. The immunized state of the organism is evidenced not only by jennerian control but also by the presence in the blood of specific antibodies that inhibit hemolysis in the presence of vaccinal antigen. Such antibodies are never found in persons who have not had smallpox or who have not been vaccinated. The percentage of nontakes for the two types of vaccination (percutaneous, intradermal) is about the same. The intradermal reaction never causes injuries provided the technic is rigorously aseptic and the lymph employed is absolutely sterile. From the cosmetic point of view it is preferable to the percutaneous method.

Hemoglobinuria in Children with Malaria.—Genoese found numerous hemoglobin granules in the urine of a child, aged 5, with malaria. Hemoglobinuria in malaria in adults, though common in Africa, Asia and New Zealand is not frequent in Europe. Italy and Greece are the two countries in which cases have been found. In children it is especially rare. Hemoglobinuria in children results from various causes having as a common basis a rather marked hemolysis. The author's patient had rebellious vomiting preceded by pains in the epigastrium and a painful sense of oppression in the chest. The best medication for hemoglobinuria in children is calcium chloride in large doses, together with remedies that serve to combat vomiting, maintain the heart function and activate the renal function. In hemoglobinuria in malaria patients who give a positive blood reaction, quinine tannate is indicated, the urine being watched carefully.

Policlinico, Rome

35: 229-284 (May 1) 1928. Medical Section

*Immediate Effects of Blood Transfusion on Composition of Circulating Blood in Grave Anemias. E. Greppi and A. Ratti.—p. 229.
*Hemorrhagic Diathesis. V. Fanano.—p. 255.
Bone Marrow in Malaria Patients. A. Pozzi.—p. 267.
Presence of Histoid Cells in Blood in Lymphatic Leukemia. G. Goglia. —p. 280.

Immediate Effects of Blood Transfusion on Composition of Circulating Blood in Grave Anemias.—Greppi and Ratti report that their study of the quantitative variations of hemoglobin, of the number of corpuscles in the unit of volume of blood, and of the protein content of the serum shows that, in secondary anemias, blood transfusion causes a change in the relative values which, in most cases, must be interpreted as due to dilution of the host's blood, with a probable retention in the viscera of part of the corpuscles. Less frequently, the reverse effect is observed, the quantitative changes corresponding to the actual amount of blood infused, or even exceeding it, a condition of concentration being evident. The varying type of reaction does not depend directly on the nature or the gravity of the disease. Also the intravenous injection of a saline solution, if studied with the same criteria, is found to be capable of producing an actual increase of the fluid of the blood tissues, in a similar manner, if not to the same extent, to that which follows blood transfusion. The phenomenon of dilution is the most frequent and constitutes the most interesting observation, as it reveals what a profound effect infused blood exerts on the water balance of the organism in cases of grave anemia.

Hemorrhagic Diathesis.—Three children, aged 6, 4 and 5, respectively, presented hemorrhages of the skin and mucosa of the spontaneous type. The diathesis was not hereditary and was not dependent on acute or chronic infections (Wassermann test, skin reaction to tuberculin, radioscopy of the thorax, all negative), hence not symptomatic. Blood researches revealed in all three patients the typical characteristics of purpura (vascular lability, thrombopenia, giant blood platelets of pale color, absence of retractility of the coagulum). These vascular and blood stigmata of purpura were always present, not only during hemorrhagic manifestations but also during the intervals between attacks. In this condition of constitutional blood and vascular lability innumerable causes may call forth hemorrhagic or purpuric attacks.

Archivos Latino-Am. de Pediatría, Buenos Aires

22: 61-130 (Feb.) 1928

*Alimentary Anemias in Infancy. M. Acuña and P. Winocur.—p. 61.
*Pneumothorax with Recovery in an Infant. J. R. Mendilaharzu and R. Kreutzer.—p. 73.
*Ultraviolet Rays in Treatment of Premature and Congenitally Weak Infants. L. Velasco Blanco and E. Virasoro.—p. 81.
Nontraumatic Meningeal Hemorrhage in a Child. J. C. Martinez.—p. 91.
Formation of Antibodies in Infants. M. Schteingart and P. R. Cervini.—p. 99.
Teaching of Infant Care. T. A. Tonina.—p. 105.

Alimentary Anemias in Infants.—Acuña and Winocur conclude that infantile anemias, specially in the nursing child, are caused by an insufficient and improper diet. The intensity of the anemia differs with the environment, the individual idiosyncrasy of the child, the functioning of the blood-forming organs, and the state of the vitamin reserve.

Pneumothorax with Recovery in an Infant.—A baby, seen first when 26 days old, and presenting signs of congenital syphilis, for which treatment was given, had a right bronchopneumonia at the age of 4 months. Resolution took place, but fifteen days later purulent pleurisy developed on the same side. The pus was aspirated. Pneumothorax developed twenty days later. The pneumothorax did not aggravate the empyema, but did not disappear until three months later.

Ultraviolet Treatment of Premature and Congenitally Weak Infants.—Ultraviolet rays are not a panacea for congenital weakness, according to Velasco and Virasoro, but good results were obtained in ten cases. Results are more rapid and complete when ultraviolet rays are used in conjunction with dietary measures. The authors used Marriott's acid milk in a few cases.

Folha Médica, Rio de Janeiro

9: 101-112 (March 25) 1928

Tuberculosis: Reasons for More Radical Treatment. A. Miranda.—p. 101.
*Case of Tuberculous Peritonitis: Cure. L. de Aquino.—p. 105.

Tuberculous Peritonitis.—Aquino's patient, aged 25, complained of considerable abdominal pain, more marked around the umbilicus. He had suffered for two years. Recovery followed an exploratory laparotomy. The pain disappeared, and the fever was gone in twelve days. Nine years after operation he is still in good health.

Revista de Medicina y Cirugía de la Habana, Havana

33: 109-136 (Feb. 10) 1928

Treatment of Goiter. G. E. Aróstegui.—p. 109.
*Foreign Bodies in Respiratory Tract. E. Martinez, Jr.—p. 120.
Cholecystography in Diagnosis of Diseases of Biliary and Digestive Tracts. A. G. Dominguez.—p. 127.
Anatomy, Insertion of Flexor Carpi Ulnaris. C. Cabrera Calderín.—p. 132.

Foreign Bodies in the Respiratory Tract.—Martínez reports six cases. All were in children, aged from 4 to 12 years. Extraction was performed by means of bronchoscopy. In two children, aged 2 years, upper bronchoscopy failed, and in a child 3 years old it produced subglottic edema, which required tracheotomy. On account of the small size of the larynx at this age, great skill is required to perform upper bronchoscopy. Without this skill, tracheotomy is preferable.

33: 137-176 (Feb. 25) 1928

Cystography: Importance in Diagnosis of Bladder Disease. J. B. Ruiz.—p. 137.
*Early Diagnosis of Hereditary Syphilis. T. Valledor.—p. 150.
New Etiologic Conception of Keratosis Pilaris. R. Quero.—p. 171.

Early Diagnosis of Hereditary Syphilis.—Valledor noted habitual vomiting in 5.5 per cent of his cases. Hydrocephalus was present in 7.5 per cent. Repeated vomiting, indigestion, convulsions, slight hydrocephalus, bright eyes, insomnia, Sixto's sign, encephalopathy, epitrochlear adenopathy, etc., are frequent symptoms. The blood Wassermann reaction, although of absolute value when positive, was negative in most of his cases. The spinal fluid test gave few positive results. The colloidal gold test, as modified by Castellanos, is very valuable for diagnosis.

Archiv für Kinderheilkunde, Stuttgart

84: 1-80 (April 27) 1928

Measurements of Intensity of Rays from Mercury Vapor Lamp. H. Koeppe and G. Lauber.—p. 1.
Radial Neuritis in Parrot's Pseudoparalysis. W. Sladczyk.—p. 8.
*Prognosis of Renal Diseases in Childhood. H. Rosenmöller.—p. 13.
Influence of Infections on the Development of Infants in Institutions. S. Levy.—p. 27.
*Milkless Diet in Infancy. G. Abraham.—p. 36.
Amount of Antineuritic Vitamin B in Cow's Milk. P. Reyher.—p. 55.

Prognosis of Renal Diseases in Childhood.—On the basis of twenty-six cases with two deaths (one in the acute stage, one after seven years), fourteen complete cures and four probable cures, Rosenmöller confirms the opinion of other investigators that the prospects for cure of renal diseases are better in children than in adults. The intactness of the vascular system and the greater capacity for regeneration and for growth in childhood are factors in the better prognosis.

Milkless Diet in Infancy.—In the acid stools of infants fed on milkless diets (zwiebach pudding or meat pudding), there is a tendency toward alteration of the stool flora toward the gram-positive side. The number of colon bacilli diminish markedly. Infants fed for more than one year on a milkless diet differed in no way from children receiving a normal diet.

Deutsche medizinische Wochenschrift, Berlin

54: 685-726 (April 27) 1928. Partial Index

Psychotherapeutic Ideas in Modern Medicine. A. Kronfeld.—p. 685. C'td.
Cerebrospinal Fluid After Suboccipital Injection of Spirochetes of Recurrent Fever. R. Strempel.—p. 687.
*Comparative Nutritional Value of Cooked and of Raw Egg. A. Scheunert, M. Schieblich and E. Wagner.—p. 689.
Maturing of Bony System. E. Stettner.—p. 691.
Bone Formation—Comparative Anatomy. E. Heidsieck.—p. 694.
*Etiology and Treatment of Asthma. K. Hajós.—p. 695.
*Earliest Clinical Symptoms of Atrophy of the Anterior Lobe of the Pituitary: Their Treatment. Reye.—p. 696.
*Diabetes and Work of Pancreas. F. Rabe.—p. 697.
Treatment of Acute Otitis Media. W. Uffenorde.—p. 699. C'cn.
*Dependence of Action of Insulin on Ovary. E. Vogt.—p. 701.
Prevention and Treatment of Morphinism. E. Meyer.—p. 702.
Growth Material of Yeasts. T. Sabalitschka.—p. 703.
*Tympanic Vagus Irritation in Vagus Heart. E. Hoffstaedt and E. Rosenbaum.—p. 704.
*One-Day Fever in the Puerperium. S. Heckscher.—p. 705.
*Treatment of Chronic Urticaria. O. Burwinkel.—p. 706.

Comparative Nutritional Value of Cooked and of Raw Egg.—A new series of feeding experiments with rats confirms Scheunert et al. in their conviction that cooking does not injure the nutritive value of eggs. Furthermore, rats that became ill on the raw egg diet recovered when put on a diet of hard boiled egg.

Etiology and Treatment of Asthma.—The rôle of exogenous factors in the etiology of asthma has been overstressed in recent years, in Hajós' opinion. Treatment must aim at bringing the vegetative nervous system into equilibrium or at altering the direction of its lability. In discussing "equivalents," he mentions a case in which mucous colitis, urticaria and paroxysmal tachycardia alternated.

Earliest Clinical Symptoms of Atrophy of the Anterior Lobe of the Pituitary: Their Treatment.—Reye lists the symptoms of Simmond's disease: difficult childbirth, severe hemorrhage with slow recovery, but without sepsis, and followed by absence of menses, disappearance of libido, adiposity, increasing weakness and mental depression, paleness of the skin, loss of hair and teeth, subnormal temperature, chilliness, gastrointestinal disturbances, eosinophilia, low blood pressure, reduced basal metabolism. A later symptom is cachexia. He has had remarkable success, including complete symptomatic cure in a few weeks and return of the menses (after as long an interval as nine years), from treatment with substance of the anterior lobe of the pituitary.

Diabetes and the Work of the Pancreas.—Rabe finds it probable that absence of large demands on the external secretion of the pancreas favors its function of internal secretion, and vice versa. In animal experiments he found that the external secretion was least after intake of vegetables and meal, particularly oatmeal, greater after bread, potatoes and sugar, greatest after milk and meat.

Dependence of Action of Insulin on the Ovary.—Uterine hemorrhages of ovarian origin were treated successfully by Vogt with insulin. He found that insulin acted most powerfully just before menstruation, and least powerfully in the first few days after menstruation. This should be taken note of in the insulin fattening treatment of nondiabetics. During pregnancy the action of insulin in nondiabetics is not subject to any great variations. Serum obtained immediately before menstruation and pure ovarian hormone, free from albumin and soluble in water, proved to be powerful activators of insulin.

Tympanic Vagus Irritation in Vagus Heart.—A man, aged 27, who had had asthma, hyperhidrosis and paleness of the skin of vasomotor origin, was attacked by otitis media, with nonpurulent exudate behind the eardrum. Four days later, bradycardia, hypotonia and hypothermia were noted. Clearing up of the exudate was followed promptly by retrogression of the vagotonic symptoms. In this case Hoffstaedt and Rosenbaum assume reflex irritation of the vagus by the exudate by way of the tympanic nerve, which has its origin in the petrous ganglion, and a little-known branch of the latter, which anastomoses with the vagus.

One-Day Fever in the Puerperium.—A review of puerperal temperature curves over a period of two years showed a rise of temperature lasting from one to two days in about one tenth of the cases. The rise appeared on the evening of the third or fourth day after the delivery. The birth had been spontaneous, no interventions had been necessary and vaginal examinations had not been made. In almost all these cases the bladder was found to be full. The patients had passed little urine. Heckscher believes that an explanation of this one-day fever may be found in the full bladder, which, by pressure on the uterus, caused stasis of the lochia and absorption of toxins. The toxins may be explained by decomposition of the lochia by saprophytic micro-organisms in the uterine cavity. He urges the importance of frequent emptying of the bladder in the first few days after delivery.

Treatment of Chronic Urticaria.—Burwinkel found a salt-poor vegetarian diet in combination with large doses of sodium bicarbonate effective in treating chronic urticaria. Venesection (3-4 cc., less in women and in children), in addition, improves the results.

Klinische Wochenschrift, Berlin

7: 825-872 (April 29) 1928. Partial Index

Hormone of Anterior Lobe of Pituitary. B. Zondek and S. Aschheim. —p. 831.
Participation of Intestinal Wall in Excretion of Hydrogen Ions. K. Scheer.—p. 835.
*Disturbance of Blood Sugar Regulation in Acute Infectious Diseases. A. Elkeles and F. Heimann.—p. 836.
Organotherapy and Insulin Treatment of Endogenous Mental Disturbances. P. Schmidt.—p. 839.
*Central Regulation of Carbohydrate Metabolism. E. Róth.—p. 842.
*Tar Anaphylaxis and Anaphylactic Migraine. W. Berg.—p. 844.
"Pharmacologic Bases of Rational Iron Therapy." A. Bickel.—p. 845.
Reply. E. Starkenstein.—p. 846.
Sensitiveness of Carcinoma Cells to Heat. Goldscheider and Walinski. —p. 847.
Reply. B. Mendel.—p. 847.

Disturbance of Blood Sugar Regulation in Acute Infectious Diseases.—Disturbance of blood sugar regulation, manifested by long continuing hyperglycemia after administration of small amounts of dextrose, was observed by Elkeles and Heimann in patients with diphtheria and with postdiphtheritic paralysis. The action of galactose and of levulose, as well as of dextrose, was tested, and it was found that levulose was more easily converted into glycogen than were dextrose or galactose. It appears that hepatic changes without a definite pathologico-anatomic basis may be responsible for functional insufficiency. Whether the epinephrine system or the sympathetic is chiefly concerned in this disturbance of blood sugar regulation and how important a rôle is played by electrolytic disequilibrium is not yet clear.

Central Regulation of Carbohydrate Metabolism.—In a man, aged 41, glycosuria independent of administration of carbohydrate and with normal blood sugar values, developed after a fall. It could not be influenced by insulin. On a carbohydrate-poor diet, acetone was always present in the urine; on a carbohydrate-rich diet, it disappeared, to reappear again as soon as carbohydrate was eliminated from the diet. Róth connects this metabolic disturbance with the trauma sustained, which resulted in roentgenologically demonstrable permanent changes in the base of the skull. On the basis of this observation, Róth suggests that changes in the pituitary or hypothalamus may be responsible for the glycosuria and easily provoked acetonuria of pregnancy.

Tar Anaphylaxis and Anaphylactic Migraine.—A man engaged in tarring roads developed coryza, dyspnea, headache confined to the left side, nausea, watering of the eyes and vertigo. The patient and six controls were tested with inhalation of coal tar vapor. In the patient the result was a typical anaphylactic attack with the symptoms above noted, including the headache. Each experimental attack was followed by an increase in the number of eosinophils from 1 to 12 per cent. The blood calcium was below normal. In the controls the reaction was trivial.

7: 873-920 (May 6) 1928. Partial Index

Breaking Through Blood-Spinal Fluid Barrier and Blood-Aqueous Humor Barrier by Diuretics. A. Franceschetti and H. Wieland.—p. 876.
Liver Treatment of Pernicious Anemia. V. Schilling.—p. 882.
*Influence of Pancreas Preparations on Disturbance of Absorption of Foodstuffs in Depancreatized Dogs. M. Nothmann.—p. 886.
Pseudopolyopia. H. Rothschild.—p. 888.
*Anthracosis and Pulmonary Tuberculosis. T. Wedekind.—p. 890.
Alcapton in Cerebrospinal Fluid of an Infant. G. Katsch and A. Mader. —p. 895.
Group-Specific Differentiation of Human Organs. I. L. Kritschewski and L. A. Schwarzmann.—p. 896.
Reply. E. Witebsky.—p. 896.
"Primary Toxic Action of Dick Toxin." F. von Gröer.—p. 897.
*Metabolism of Leukocytes. A. Fujita.—p. 897.
Carotid Sinus Reflex in Man. Z. Tomanek.—p. 898.

Influence of Pancreas Preparations on Disturbance of Absorption of Foodstuffs in Depancreatized Dogs.—Almost no fat or muscle fibers were found in the stools of depancreatized dogs that were fed a preparation of pancreas.

Anthracosis and Pulmonary Tuberculosis.—In a series of experiments on rabbits, Wedekind succeeded in producing healing of tuberculosis of fatal type by intravenous injection of a suspension of coal dust. His theory is that irritation of the cells of the vascular endothelium by the particles of coal gave rise to migration of large numbers of phagocytes into the lung tissue.

Metabolism of Leukocytes.—In investigations on rats, Fujita found that the metabolism of both the white cells of the bone marrow and the leukocytes of the circulating blood was the same as that of normal embryonal cells: extensive and aerobic glycolysis and a respiration which is sufficient to bring the glycolysis almost to the point of disappearance. If the leukocytes are injured, respiration sinks first, just as in the case of other embryonal cells. The theory that the leukocytes closely resemble carcinoma cells in their metabolism is incorrect, according to these results.

Medizinische Klinik, Berlin

24: 725-760 (May 11) 1928. Partial Index

Objective Demonstration of Rheumatic Diseases. H. Schade.—p. 725.
Liver Diet and Pathogenesis of Pernicious Anemia. I. Zadek.—p. 728.
Influence of Internal Secretion of Testis on Conception and Pregnancy. W. Reiprich.—p. 728.
Etiology of Encephalomyelitis Disseminata. F. Paul.—p. 732. C'td.
*Use of Radium-Coated Dressings in Medicine. M. Heiner.—p. 735.
Use of Reflector in Otorhinolaryngology. J. Abraham.—p. 739.

Use of Radium-Coated Dressings in Medicine.—Heiner recommends pieces of linen coated with a varnish containing radium as convenient for use in the treatment of chronic skin diseases, muscle and joint inflammations, neuralgias, etc. This method of treatment is particularly useful in cases in which a stormy reaction is not desirable, such as light and moderately severe cases of exophthalmic goiter. The loss of radio-activity is only that natural to radium in any form.

Medizinische Welt, Berlin

2: 677-712 (May 5) 1928. Partial Index

Skin Allergy in Tuberculosis. M. Michael.—p. 677.
Myogenous Ankylosis of Jaw. J. Becker.—p. 681.
*Treatment of Asthma with Allergen-Free Chambers. O. König.—p. 682.
Etiology and Treatment of Hallux Valgus. J.Oeder.—p. 687.
*Ultraviolet Fluorescence and Oxygen Activation in Blood. V. Hufnagel. —p. 688.
*Treatment of Rheumatism. W. Vulpius.—p. 689.

Treatment of Asthma with Allergen-Free Chambers.—König reports on about 400 cases of asthma treated with allergen-free chambers. An allergic diathesis was present in 82 per cent of all the asthma patients. Inoculation with allergens gave positive skin reactions in 65 per cent of those tested. The reaction was positive in 95 per cent of asthmatics with allergic diathesis, in 20 per cent of asthmatics without demonstrable allergic diathesis. Asthmatics with positive skin reactions will in all probability be made free from attacks or be greatly improved by allergen-free-chamber treatment. In asthmatics with negative skin reactions, the percentage freed from symptoms or improved, will be only about 15 or 25, respectively. The cure of patients in whom hypersensitiveness of the upper respiratory passages is manifested only by a stubborn cough requires a longer time in the chambers than does that of asthmatics proper. Phenomena of irritation in the nose, nasopharynx and pharynx, on the other hand, usually disappear after from two to three days.

Ultraviolet Fluorescence and Oxygen Activation in Blood.—On the basis of spectroscopic examinations in 400 children and observations on 100 prisoners of war with beginning tuberculosis, Hufnagel believes that in the treatment of tuberculosis with ultraviolet rays the determining factor is the production or increase of activated oxygen in the blood.

Treatment of Rheumatism.—In his own case of myalgia in the neck, shoulders and back, with occasional attacks of lumbago, Vulpius found horse-back riding the best preventive exercise and cold water treatment the best form of hydrotherapy.

Münchener medizinische Wochenschrift, Munich

75: 761-808 (May 4) 1928. Partial Index

Importance of Early Diagnosis in Surgery. A. Krecke.—p. 761.
*Hormone of the Circulation. E. K. Frey and H. Kraut.—p. 763.
*Air Embolism After Attempted Abortion. H. von Hoesslin.—p. 764.
Connections Between Nervous System and Internal Organs. G. Wüllenweber.—p. 765.
Glaucoma as Circulatory Disturbance. F. Salzer.—p. 768.
Experimental Study of Epidemiology. J. Schubert.—p. 773.
Tonsillectomy in Hyperkinetic Diseases. Wichura.—p. 774.
Keeping-Qualities of Pepsin in Pepsin Wine. Brandrup.—p. 776.
Migration of Ascarides in Intestinal Operations. G. Weinschenker.—p. 776.
Morphinism and the Law. E. Schultze.—p. 777. C'cn.
Sex Hormone and Endocrine Diseases. L. Fraenkel.—p. 780.
Anterior Lobe of Pituitary and Genital Organs. K. Ehrhardt.—p. 785.
Knee Joint Effusion and Bone Thickening from Sport Strains. P. Pitzen. —p. 786.
Gonorrheal Infection of Urethra in Amputation of Penis. J. K. Mayr. —p. 788.

Demonstration and Action of Circulatory Hormone.—Frey and Kraut present further data on the substance contained in urine, which influences the circulation. By methods including adsorption to benzoic acid, they obtained a material so far purified that 0.1 mg. of the substance had the same action as 5 cc. of normal human urine. Intravenous injection of from 0.25 to 0.3 mg. in a dog of medium size increases the amplitude of the pulse one and six-tenths times. The average increase in pulse rate is 10 per cent; the fall in blood pressure, about 30 per cent. The fall in blood pressure is caused by dilatation in certain vascular tracts. Injection of the substance is followed by increase in the volume of blood in the brain, lung, spleen and muscles, and by decrease in the volume of blood in the kidneys, liver, spleen and intestines. The action of the hormone lasts only a short time and experiments show that it is a substance in the blood itself that stops its action. The hormone is not destroyed but rendered inactive. The inactivator is highly labile; it is destroyed by boiling and by acids—by the latter even after it has combined with the hormone. From the latter fact the possibility arises that the hormone may be activated in the organism by the production of carbon dioxide. In vitro the hormone can be reactivated by acid only during the first day after its inactivation. After this time, however, a protein-splitting ferment, papain, is able to restore its activity. The kidney also has the capacity of freeing the hormone from the combination with the inactivator; in the urine it is always found in its active form. Occasionally, though rarely, the free hormone is present in the blood in such quantities that injection of a few cubic centimeters of blood is followed by the phenomena of hormone activity. The inactivated hormone can always be demonstrated in the blood.

Air Embolism After Attempted Abortion.—In Hoesslin's patient, loss of consciousness followed immediately on a criminal attempt at abortion by introduction of soap solution into the uterus under pressure. Epileptic convulsions and paretic phenomena followed shortly. There was increase of protein and cells in the cerebrospinal fluid. Hoesslin is inclined to reject corrosive encephalitis because of the promptness with which the symptoms appeared, and to accept air embolism as the cause, in spite of the difficulties involved. He suggests that the injury might have been caused by interruption of the nutrition of the nervous tissue, rather than by the embolism as such.

Wiener klinische Wochenschrift, Vienna

41: 617-652 (May 3) 1928. Partial Index

Influencing Metabolism by Heat. H. Schur and A. Löw.—p. 617. C'td.
*Tonsillar Primary Focus in Nephritis. V. Kollert and E. Suchanek.—p. 620.
*Lumbar Puncture in Electrical Injuries. S. Jellinek.—p. 622.
*Monocytic Reaction in Pulmonary Tuberculosis. F. Mattausch.—p. 624.
*Heart Disease and Pregnancy. J. Halban.—p. 628. C'td.
Advantages and Dangers of Diagnostic Cistern Puncture. W. Kindler. —p. 632.
Biologicochemical Tendencies in Dermatologic Research. E. Urbach.—p. 634. C'cn.

Tonsillar Primary Focus in Nephritis.—In a great majority of cases of chronic progressive glomerulonephritis, Kollert and Suchanek believe there may be found somewhere in the body an inflammatory focus that is of primary importance for the renal disease. When this focus is in the tonsils, the peritonsillar tissue, particularly the glands lying in front of and behind the submaximallary gland, will frequently be found involved. When this is the case, the results of tonsillectomy are likely to be disappointing. The authors do not perform tonsillectomy in the presence of very severe peritonsillar disease, in hypertension above 160 mm. of mercury, in relatively young persons, in the presence of preuremic signs or if the renal function test shows that only a small portion of the kidney is capable of function. If tonsillectomy is to be done, the great danger of infection of the peritonsillar tissue necessitates special measures. Instead of extensive infiltration with the local anesthetic, infiltration of the palatine arch only is advisable. All

squeezing of the tonsils must be avoided. Infection of the field of operation from the buccal cavity is combated by painting with a bactericidal dye.

Curative Action of Lumbar Puncture in Severe Electrical Injuries.—Jellinek reports a case in which a man, apparently moribund from electrical injury, recovered after removal of 25 cc. of cerebrospinal fluid. In two necropsies on men who died from electrical injuries, edema and swelling of the brain were demonstrated. In one of these cases the symptoms of disturbance of the central nervous system (convulsions, delirum, etc.) came on gradually after recovery from the initial loss of consciousness, and death did not take place until twelve days after the accident. In the other case the circulatory disturbances must have followed immediately on the trauma, for the interval between trauma and death was brief.

Position of Monocytic Reaction in Leukocyte Curve in Chronic Pulmonary Tuberculosis.—Schilling's three blood-picture phases are discussed by Mattausch in relation to the estimation of the organism's resistance. These phases—neutrophil reaction, monocytic reaction and lymphocytic reaction—appear always in this order, though one may overlap the other (which is particularly true of the monocytic reaction). The neutrophil reaction corresponds to the progressive and destructive tendency; the monocytic reaction signals the onset of a vigorous defense; it often lasts for a long time, but yields to the lymphocytic reaction when the healing tendency has become established.

Heart Disease and Pregnancy.—Halban insists on the importance of differentiating between insufficiency and stenosis of the mitral valve. The former, if compensated, is a relatively benign, the latter an extremely grave complication of pregnancy.

Zeitschrift für Ärztliche Fortbildung, Jena

25: 301-340 (May 1) 1928. Partial Index

*Diagnosis of Cardiac Insufficiency. Paessler.—p. 301.
*Diagnosis of Tumors of Upper Abdominal Cavity. H. Determann.—p. 304.

Diagnosis of Cardiac Insufficiency.—Dilatation of the heart, alone, if definitely demonstrated, is evidence of cardiac insufficiency. In the case of the hypertrophied heart, a slowly gathering, resistant apex-beat is, in general, characteristic of insufficiency. In insufficiency of the left ventricle of a non-hypertrophied heart, as in severe myocarditis, the forward thrust of the apex is likewise gradual but there is no resistance. Auscultation gives little information as to the functional efficiency of the heart. Extrasystoles and absolute irregularity of the pulse are warnings to search carefully for other signs of insufficiency, rather than, in themselves, indications of such. Alternating bigeminal pulse, on the other hand, occurs only in weakened hearts. A presystolic galloping rhythm in hypertension (best distinguished between the apex and the middle of the heart) is a sign of grave, advanced insufficiency. The pulse is of less importance in the diagnosis of cardiac insufficiency than is assumed by most practitioners. Dyspnea, swelling of the liver, diminished excretion of urine and edemas are of great value in confirming the diagnosis. Further, their disappearance or reappearance during treatment are valuable means of controlling the efficacy of the latter.

Diagnosis of Tumors of Upper Abdominal Cavity.—In the functional diagnosis of the pancreas, the practitioner will receive most help from examination of the stool after Schmidt's test meal. Radiation of the pain posteriorly and to the left serves to differentiate a pancreatic from a gallbladder or hepatic lesion. Deep, boring pains may be the earliest sign of carcinoma of the head of the pancreas. As regards symptoms from occlusion of the excretory ducts, it must be remembered that ulceration of the tumor may at any time free the ducts. Pancreatic cysts are not extremely infrequent and are very difficult to diagnose. All tumors of the liver, including the pedunculated, follow the movements of the diaphragm. Passive mobility, also, is often present. Gallbladder enlargement of long standing is more likely to be caused by carcinoma than by inflammation, since, with the latter, shrinkage usually occurs with time. The early appearance of ascites is characteristic for gallbladder carcinoma. Almost all tumors of the spleen, but not all those of the kidney, are smooth. Renal and splenic cysts bear most resemblance. Åkerlund-Berg's technic, with exposures in rapid succession, is a great advance in the roentgenologic diagnosis of gastric tumors. True tumors of the intestine are rare in the upper abdomen.

Zeitschrift für urologische Chirurgie, Berlin

24: 191-420 (April 14) 1928

*Neoplasms of Kidney Capsule. M. G. Prives.—p. 191.
Question of Specificity of Immunotherapy of Gonorrheal Complications. A. I. Mkrtitschjanz and I. O. Chasanoff.—p. 214.
*Cysts of Renal Pelvis. W. S. Galkin.—p. 225.
Variations in Renal Vessels. J. Hellström.—p. 253.
Periurethritis and Periproctitis with Extensive Necrosis Due to Bacillus Oedematis Maligni. E. Trojân.—p. 273.
Extensive Tuberculous Cavitation in Prostate. L. Kielleuthner II.—p. 277.
Phenolsulphonphthalein Function Test. J. Minder.——p. 288
Diuretic Effect of Solution of Pituitary. J. Minder.—p. 301.
Ureteral Atony Masked by Hypertrophy of Prostate. P. Blatt and R. Paschkis.—p. 309.
Disease of Urinary and Sex Organs Caused by Bacterium Paratyphosum. L. Fain.—p. 320.
Results of Stricture of Posterior Urethra as Seen in Roentgenograms. A. Schmidt.—p. 348.
*Surgery in Diseases of Fused Kidney. W. Heckenbach.—p. 361.
Stenosis and Atresia of Vesical End of Ureter. C. Hueter.—p. 381.
Histotopography of Prostate and of Seminal Vesicles. M. Saigraeff.—p. 389.

Neoplasms of Kidney Capsule.—Prives reports a case of sarcoma of the renal capsule and reviews eighty-seven cases recorded in the literature. New growths of the renal capsule are limited to those which originate from the fibrous or the fatty tissue of the capsule. The mixed tumors containing cartilage, bone, muscle or epithelial elements do not have their origin in the capsule. The etiology of these tumors is obscure. An accurate diagnosis is important because it influences the prognosis, the choice of incision, the mode of operating, and the decision with regard to removal of the kidney. The most important sign in the diagnosis is the presence in a pyelogram of a ureteral deformity with displacement of a normal pelvis and an absence of any abnormality of the urinary tract. The treatment is surgical. The delayed dye excretion does not necessarily point to the existence of a kidney tumor, a growth of the capsule may cause the same by pressure on the kidney. In spite of its rarity, the presence of a retroperitoneal tumor should suggest a renal capsule neoplasm. During the operation, it may be differentiated from a hypernephroma by its anemic appearance and the absence of dilated veins on its surface. The author warns against premature severing of the ureter while attempting to establish the relations of the tumor, because, not infrequently, a normal kidney would be thus sacrificed. A kidney that is uninvolved is best not removed. Roentgen-ray therapy after the operation is indicated as a prophylaxis against recurrence.

Cysts of Renal Pelvis.—Galkin's case was of congenital origin. Indications of congenital origin are the age of the patient, or the age at which symptoms are first noted, coexisting malformations of the kidney, such as excessive lobulation, and the existence of other malformations. To prove the pelvic origin of the cyst it is necessary to establish that it is located below the capsule and that its walls are made up of pelvic and capsular elements. The origin of the cyst through failure of fusion of a part of the renal pelvis with a piece of metanephrogenous tissue should be established by finding the latter. The author's patient was a boy who had had difficult urination since birth. Both kidneys were markedly lobulated. A rare malformation, that of a cyst of the urachus, was present; the bladder presented an unusual "embryonal" formation, and congenital paradoxical ischuria or bladder atony was also present. Histologic examination showed the condition to be due to replacement of muscle elements by an unusual proliferation of connective tissue.

Surgery in Diseases of Fused Kidney.—Heckenbach concludes that much can be accomplished by operative procedures in the diseases of the fused kidney. By a heminephrectomy, or by removal of the diseased portion, the remaining kidney substance is preserved from destruction. Plastic procedures may restore more normal anatomic and physiologic conditions.

Zentralblatt für Chirurgie, Leipzig

55: 1153-1216 (May 12) 1928

*Nitrous Oxide Anesthesia. E. Strassmann.—p. 1157.
Warming the Anesthetic Gas. F. Hölscher.—p. 1161.
*Operative Treatment of Vesico-Abdominal and Urethral Fistulas. P. Gorowitz.—p. 1162.
*Expulsion of Renal and Ureteral Stones. H. Kehl and O. Thomann.—p. 1165.
Malignant Degeneration of Abdominal Testicle. E. Marcuse.—p. 1168.
Passage of Bile into Duodenum. K. Michejda.—p. 1170.
Treatment of Subcutaneous Rib Fracture. L. P. Mariantschik.—p. 1171.
Roentgen-Ray Ulcers. E. Schwarzkopf.—p. 1174.
Reply. O. Reimer.—p. 1175.

Nitrous Oxide Anesthesia.—Strassmann is impressed with the great safety of nitrous oxide anesthesia. He finds it to be particularly suitable for elderly, anemic or debilitated patients. In 2,500 gas anesthesias at the Eppendorf hospital, there was not a single fatality, and only one fatal postoperative pulmonary embolism, 0.3 per cent. In 7,500 cases of ether anesthesia there were twenty cases of fatal pulmonary embolism, 2.78 per cent, or ten times as many as with gas anesthesia. There was not a fatality or an instance of thrombosis or embolism in a series of 165 cases.

Operative Treatment of Vesico-Abdominal and Urethral Fistulas.—Gorowitz describes an operation originally proposed by Dieffenbach and modified by Saposchkoff. After the dissection of the fistula, several stab wounds are made above, below and on both sides of the wound. A stout silk suture on a needle is passed in and out and then tied. With this simple procedure the author has obtained healing in three cases of abdominovesical and in two cases of urethral fistula.

Expulsion of Renal and Ureteral Stones.—In colic from renal or ureteral stone, Kehl and Thomann propose a segmental anesthesia of the twelfth thoracic and the first lumbar segments, for which from 5 to 10 cc. of a 2 per cent procaine hydrochloride-epinephrine solution is sufficient. The result is cessation of pain, increased diuresis, and, in some cases, passage of the stone.

55: 1217-1280 (May 19) 1928

Hyperglycemia in Acute Pancreatic Necrosis. S. Hirschkorn and A. Selinger.—p. 1218.
*Pancreatitis with Hyperglycemia. W. Kreiner.—p. 1219.
Irrigation Apparatus for Urologic Cases. W. Nissel.—p. 1222.
*Primary Phlegmon of Cecum. E. Köntzey and J. Jáki.—p. 1223.
*Traumatic Appendicitis. T. Wilhelm.—p. 1226.

Pancreatitis with Hyperglycemia.—Kreiner found pronounced hyperglycemia in two cases of pancreatitis. Administration of insulin was effective. He concludes that hyperglycemia is a valuable diagnostic sign of pancreatitis.

Primary Phlegmon of Cecum.—Köntzey and Jáki call attention to the occurrence of an acute phlegmon of the cecal wall other than that caused by appendicitis. Hellström collected forty such cases from literature. The etiology appears to be a severe streptococcus infection of the bowel mucosa, injured through fecal stasis, with an extension into the bowel wall. In their own case there was found at operation a thickly infiltrated, edematous cecum and ascending colon. The nearest coils of the ileum were likewise severely inflamed. The appendix was free from all symptoms of inflammation. The authors consider resection of the involved bowel as the proper procedure in similar cases.

Traumatic Appendicitis.—Wilhelm reports three cases of acute appendicitis apparently caused by trauma to the abdominal wall. In one, pain in the right lower quadrant was complained of shortly after the trauma, and on the eighth day, at operation, an acute suppurative appendicitis was found to be present.

Zentralblatt für Gynäkologie, Leipzig

52: 1113-1176 (May 5) 1928

*Toxic Pulmonary Edema and Eclampsia. E. Klaften.—p. 1114.
Water Metabolism in Menstruation and Pregnancy. H. Rupp.—p. 1119.
*Flocculation Test for Diagnosis of Pregnancy. R. Cordua.—p. 1130.
Torsion of the Tubal Pedicle. R. Schreiner.—p. 1139.
Results of Sterilization by Crushing the Tube. Y. Kojima.—p. 1141.
Priority in Sterilization by Bringing the Tube Outside the Abdominal Cavity. Correction. F. Engelmann.—p. 1147.
*Unusual Forms of Tuberculosis of Female Genital Organs. G. Halter.—p. 1148.
Polycystic Tumor of Uterus. G. Halter.—p. 1153.
Use of Obstetric Binder in Labor. J. Werboff.—p. 1156.

Toxic Pulmonary Edema and Eclampsia.—In the case described by Klaften, the first attack of eclampsia, at the end of pregnancy, was preceded by a sudden attack of severe dyspnea and edema of the lungs. The urine contained albumin. After three further eclamptic attacks, with intervals of deep unconsciousness, labor was terminated. The last attack occurred five hours after normal expulsion of the placenta. The pulmonary edema disappeared promptly and there were no other complications of the puerperium. The attack of eclampsia took the form of tetanic spasms followed by typical tonoclonic spasms. The preeclamptic state was distinguished by tachypnea and dyspnea with respiration increasing to sixty a minute, in contrast to the usual symptom of deep breathing.

Flocculation Test for Diagnosis of Pregnancy.—Using a modification of Vogel's ninhydrin flocculation test in a large number of cases, Cordua found that, in general, the serum in pregnancy, especially in the later months, had less tendency toward flocculation, or, in other words, was more stable, than normal serum. However, since in a number of other conditions the serum shows a similar reaction, he does not consider it justifiable to regard this as a specific pregnancy reaction.

Unusual Forms of Tuberculosis of the Female Genital Organs.—In the first case described by Halter, a soft undermined ulcer on the inner side of the labium minor and a similar one on the portio were found to be tuberculous. The presence of bilateral adnexal swelling and a slight erosion on the portio had been ascertained a year before and there was an earlier history of pulmonary inflammation. In the second case, in a patient operated on for carcinoma of the uterus, it was found that an old tuberculous lesion had become cicatrized, causing complete atresia of the uterus. In the tubes, which were also partially obliterated, were found isolated nodules and calcareous deposits. The patient, aged 34, had never menstruated and it is probable that the atresia developed before puberty. No causal connection between the tuberculosis and the carcinoma is apparent.

Zentralblatt für innere Medizin, Leipzig

49: 409-440 (May 5) 1928

*Formation of Urine. K. Buinewitsch.—p. 410.

Formation of Urine.—According to Buinewitsch's theory, water and sodium chloride are secreted in the tubules; the other constituents of the urine—urea, uric acid, etc.—in the glomeruli, where, also, the urine is concentrated. This theory, he holds, is the only one that agrees with the clinical observations in renal diseases.

Klinicheskaya Meditsina, Moscow

6: 497-550 (May) 1928

*Clinical Value of Diastase Determination in Urine. D. G. Oistrach and B. I. Serebrennik.—p. 521.

Clinical Value of Diastase Determination in Urine.—Oistrach and Serebrennik determined the diastase content of urine in a variety of clinical conditions and found that a definite increase occurred only in pancreatic disease. A relationship between the rise of the diastase content and the degree of pancreatic involvement was not observed. In their investigations, apparently mild, transient conditions gave high figures. They consider the determination of diastase in the urine by Wohlgemuth's method to be the quickest and most accurate single laboratory sign of pancreatic disease.

Medico-Biologicheskiy Jurnal, Moscow

5: 1-136, 1927

*Innervation of Blood Vessels. A. B. Leontovich.—p. 14.

Innervation of Blood Vessels.—The arteries from the aorta to the capillaries possess a very extensive nerve supply. The nerve fibers are principally those described by Remack. The vasomotor nervous system was shown to consist of: (1) Arnold's network of Remack's fibers. This network receives branches from nerve fibers which run close to the artery. It was found in the adventitia, once in the muscle layer of the artery (vasoconstrictors). (2) Finer, more divided, longitudinally running fibers, probably vasodilators. Leontovich also found many ganglion cells, principally at the point of division of nerve branches.

Vestnik Rentgenologii i Radiologii, Leningrad

6: 1-93, 1928

*Roentgen-Ray Diagnosis and Treatment of Tumors of Pituitary. M. T. Nemenor and Anna Ugenburg.—p. 3.

Roentgen-Ray Diagnosis and Treatment of Tumors of the Pituitary.—The results of roentgen-ray therapy in forty-five cases of disease of the pituitary were gratifying. Nemenor and Ugenburg's patients presented characteristic clinical pictures, either of acromegaly or of dystrophia adiposogenitalis. Both forms, however, sooner or later displayed the characteristics of a polyglandular disturbance. Roentgenography plays an important rôle in the diagnosis. Not only can the widening or the destruction of the sella turcica be demonstrated, but the direction of the destructive process can also be recognized. A normal sella turcica in the presence of an adiposogenital symptom-complex means that the lesion is not in the hypophysis, but elsewhere in the brain. Such cases are not benefited by irradiation. The results of roentgenotherapy are superior to those of surgery. The improvement noted lasted for a long time. Recurrences were rare. The treatment must be persisted in for a long period, with intermissions of not more than six months.

Nederlandsch Tijdschrift v. Geneeskunde, Haarlem

72: 1773-1876 (April 14) 1928

Floating Kidney. J. van Gulik.—p. 1774.
Rational Medical Treatment of Epileptic Attacks. E. D. Wiersma. —p. 1781.
*Determining Factor in Length of Pregnancy. A. C. Hagedoorn and A. L. Hagedoorn.—p. 1792.
*Asthma, Epinephrine and Blood Pressure. W. Kremer.—p. 1795.
Defects of Hematoxylin Nuclear Staining. G. C. van Walsem.—p. 1808.
Case of Thrombosis of Superior Vena Cava. A. R. Jonkhoff and J. G. Geerling.—p. 1813.

Determining Factor in Length of Pregnancy.—The young of female rabbits and male hares are born hairless and blind at the end of four weeks and, in the stage of their development, resemble new-born rabbits. In the instance related by Hagedoorn and Hagedoorn, a female hare was mated with a male rabbit. The young were born after a period of gestation of about twice four weeks and with a complete coat of hair and eyes open, and resembled in the stage of their development new-born hares. Later they were indistinguishable from the progeny of female rabbits and male hares. These facts seem to prove that the length of pregnancy is determined solely by the genotype of the maternal organism and that the stage of development of the fetus is not a factor in initiating parturition.

Asthma, Epinephrine and Blood Pressure.—Abnormal fulness of the capillaries is common to all of the group of allergic diseases to which asthma belongs, and which includes urticaria, Quincke's edema, some cases of migraine, vasomotor rhinitis and hay-fever. Since narrowing of the uppermost respiratory passages (in the nose) results from swelling of the mucosa, due to too much blood in the capillaries, the same cause may be assumed for stenosis in the deeper-lying parts of the respiratory apparatus. Epinephrine contracts the vessels of the pulmonary circulation, and thus brings about diminution of the pulse volume of the left heart, with consequent dilatation of the respiratory passages. The cause of the special lability of the capillary walls in asthma patients, Kremer believes must be sought in certain constituents or properties of the blood.

Finska Läkaresällskapets Handlingar, Helsingfors

70: 227-310 (April) 1928

*Bovine Undulant Fever. R. Ehrström.—p. 227.
*Hematoporphyria with Ileus-Like Symptoms. F. Langenskiöld.—p. 241.
Intestinal Absorption of Infants' Foods and Crackers. E. Grönberg et al.—p. 252.
Question of Extralenticular Mechanism of Accommodation in Eye. F. Leiri.—p. 258.

Bovine Undulant Fever.—Ehrström's patient had been exposed to possible infection with Bang's bacillus. The course of the fever and the clinical picture agreed with infection with *Bacillus abortus*. The blood serum agglutinated *Bacillus abortus* in the dilution 1:500. He discusses undulatory fever with special reference to Kristensen's investigations (Ugeskrift for Læger, Dec. 8, 1927).

Hematoporphyria with Ileus-Like Symptoms.—Langenskiöld records the instance of a man, aged 51, with colic-like abdominal pain, complete retention of feces, marked meteorism, and vomiting. Skin and sclerae were yellowish. The urine was dark red and contained abundant hematoporphyrin and urobilinogen. In the main the symptoms agreed with those of acute hematoporphyria. He has, however, found no record elsewhere of jaundice, as in his case; hepatogenic icterus was excluded. All symptoms disappeared within two weeks. There was no evidence of exogenic origin.

Norsk Magazin for Lægevidenskapen, Oslo

89: 449-554 (May) 1928

Sex Limited Lethal Hereditary Factors in Man. G. H. M. Waaler. —p. 449.
Present Status of Cancer Problem. G. H. M. Waaler.—p. 457.
Three Cases of Cerebral Syphilis. E. Hval.—p. 468.
*Intracardiac Injection of Epinephrine. G. Johnson.—p. 478.
Spread of Tuberculosis. J. Heimbeck.—p. 479.
*Acute Surgical Pancreatic Diseases. A. Øwre.—p. 483.
*Determination of Blood Iodine. G. Lunde and K. Closs.—p. 500.

Intracardiac Injection of Epinephrine in Threatening Death During Narcosis Induced by Ethyl Chloride.—Examination of heart and lungs in a child, aged 3, two weeks before removal of tonsils and adenoids was negative. During the operation, under general ethyl chloride anesthesia, respiratory failure and collapse suddenly occurred, with the picture of heart paralysis. Artificial respiration was of no avail. As a last resort, Johnson injected 0.5 cc. of epinephrine into the heart and continued artificial respiration; reanimation rapidly followed. After three or four minutes, artificial respiration could be stopped and the operation was quickly completed. One hour later the child seemed wholly normal.

Acute Surgical Pancreatic Diseases, with Case of Traumatic Pancreatitis.—Øwre publishes four cases of acute diseases of the pancreas treated in the past year, together with a tabulated review of eight cases treated since 1913. In the acute form, two points in particular make diagnosis difficult: failure to consider the pancreas and confusion with other acute abdominal disorders. The diastase determination is an aid to diagnosis. Drainage of the pancreas from the front through the gastrocolic ligament is considered the best treatment; of late the practice is also to drain the biliary tract because of the frequent combination with gallstones. In treatment of pancreatic fistulas, roentgen therapy, dilatation, and cauterization may be tried.

Determination of Iodine Content of Blood.—Lunde and Closs state that their investigations in two cases showed the normal iodine content of the blood in Oslo to be 0.011 to 0.016 mg. per hundred grams. In all cases examined to date, they have been able to prove and determine the iodine content of the blood and they maintain that iodine is a normal component of blood. They have also established and determined an inorganic as well as an organic component of the blood iodine. Their method of determining the iodine content is based on von Fellenberg's. They assert that the methods of earlier investigators gave too low figures for the organic components.

Ugeskrift for Læger, Copenhagen

90: 399-424 (May 3) 1928

*Curvature of Spine; Treatment. H. Scheuermann.—p. 399.
Case of Pernicious Anemia. T. E. H. Thaysen.—p. 405.
Liver Extract in Pernicious Anemia. E. Meulengracht.—p. 408.
Animal Parasites Among Inhabitants of Faroe Islands. R. K. Rasmussen —p. 410.

Curvature of Spine; Treatment.—For rachitic deviations in the run-about age, Scheuermann advises the horizontal position or special treatment immediately, together with antirachitic treatment; for paralytic deviations, special treatment. In school age poor posture calls for school gymnastics, rest, exercises at home, treatment of possible anemia, and observation; static (congenital) scoliosis, a raised shoe and observation; aggravated rachitic scoliosis and paralytic scoliosis, special treatment. For kyphosis and juvenile kyphoscoliosis at puberty, rest, possibly bandaging, followed later by gymnastic treatment, are indicated. An aggravation of these conditions in adults requires bandaging and gymnastic treatment. He emphasizes the fact that in curvature of the spine only active gymnastic treatment is of lasting value.